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CONTENTS.

	PAGE
THE HUMAN GEOGRAPHY OF THE POST-TERTIARY ALLUVIAL AND SANDY BELT OF THE MADRAS COAST.—By Mr. N. Subrahmanyam, M.A., L.T., F.R.G.S. ..	275
THE INDUSTRIAL CROPS OF KERALA.—By Mr. George Kuriyan, B.Sc. (London) ..	283
NEGAPATAM: A SEAPORT TOWN OF SOUTH INDIA.—By Mr. S. R. Pandyan, B.A., L.T., Dip. in Geo. ..	291
MALTA.—By Mr. V. N. S. Rao ..	319
GEOGRAPHY AND EDUCATION	
Notes on an Excursion to Pallavaram Hill.—By Mr. B. M. Thirunarayanan, B.A. (Hons.), London ..	322
Report on the Results of the Questionnaire ..	324
Suggestions for a Scheme of Work in Geography ..	329
Model Question Paper.—By Miss H. T. Scudder, M.A. ..	332
EXTRACTS FROM PERIODICALS	
The Industries of Mysore.—By Mr. Adi K. Sett, F.R.G.S., F.R.S.A. ..	336
Badrinath.—By Mr. K. Venkataswami Naidu ..	340
NEWS AND NOTES	344
REVIEWS ..	348
BOOKS AND JOURNALS RECEIVED ..	352

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*The Human Geography of the Post-Tertiary Alluvial and Sandy Belt of the Madras Coast

By

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

THE POST-TERTIARY BELT OF THE MADRAS COAST

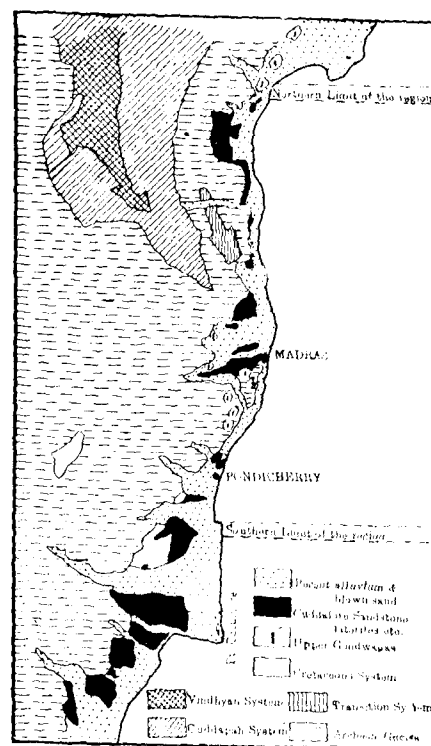
Along the entire length of the eastern coast of South India, as well as beyond this limit, lies a narrow belt of marine beds varying in width from one to four or five miles, though this belt widens into deep bays in certain places extending inland, where they are overlaid by the alluvium of several rivers. The existence of the sea along this belt in post-tertiary times is evidenced by the existence of backwaters and lagoons as at Merkanam, Covelong, Ennore and Pulicat, and the innumerable salt-pans found along the coast. These are, in fact, remnants of the sea, which have persisted in some of the low-lying parts of the plains near the coast even after the coast-line shifted outward to its present position. The islands of Sriharikota, etc., which separate the Pulicat lake from the sea, as well as long stretches along the Buckingham Canal southwards from Adyar, are entirely built of these marine beds. It is well-known that they furnish immense quantities of shells, which form an important article of export, being used in the manufacture of chunam for building purposes. These shells of marine animals are conveyed in boats along the Buckingham Canal to Madras and other places.

This belt of marine alluvium is bordered on the seaward side by the last and the youngest of the geological formations of South India, namely, *blown sand*, which is found forming low hillocks

* A paper read before the Geology and Geography Section of the Indian Science Congress at the 24th Session held in Hyderabad, January 1937.

fringing the beach, and sometimes forming ridges considerably inland. They are entirely due to the action of winds; and their further inroads inland are somewhat checked by vegetation, as is shown presently.

Sketch map of the East Coast between the mouths of the rivers Kistna and Cauvery showing the Geological formations.

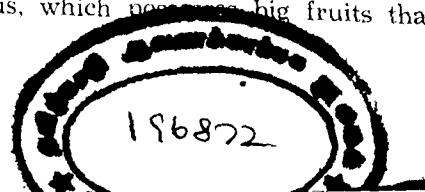


NATURAL VEGETATION

The natural vegetation along the sandy beach in this belt is monotonous and distinctly open. The forms of plant life on the sands are perennial prostrate herbs, which send long tap-roots into the soil and carry numerous long trailing shoots in a tuft—the trailing stems often striking roots at the nodes. Some of the forms like *Iponea Biloba* are efficient sand-binders, since the numerous adventitious roots form a compact net-work through the repeated branching beneath the soil.

On the sand-dunes in several places are found in a dense cluster *Spinifex Squarrosus*, which bears big fruits that hop with currents of wind.

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On the backwaters and river-mouths is a different type of vegetation, showing xerophytic features. Nearer the water and washed by it all along the bank is to be seen the *Avicennia Officinalis*, which is of the mangrove type. Several seedlings of this plant may be seen stranded on the beach after a storm. A little higher up along the banks grows abundantly *Suaeda Maritima*, which has short, thick, glaucous leaves with few inter-cellular spaces.

HUMAN GEOGRAPHY

This long narrow belt is apparently a most unpromising region for supporting human life of any kind. The swampy low-lying stretches of saline soil and the shifting sands which nowhere approximate to a loam, are alike incapable of allowing agriculture or animal husbandry to be carried out to any extent. It is interesting to find that, in spite of these natural disadvantages and drawbacks, the region has been developing in a way suited to its peculiar conditions. Over long stretches we find nowadays the ground has been covered with coconut and casuarina plantations and occasionally with cashew-nut trees.

True it is that the coconut has not got the same natural conditions of growth in the east coast as along the backwaters of the west coast of India, except in the deltas. Still, it is surprising to find that it has flourished in the coastal tracts of Madurantakam taluk and elsewhere as can be seen by a boat journey along the Buckingham Canal. The sandy saline soil suits it best, and hydrographic conditions decide the rest. Wherever sub-soil water is available, ponds are easily dug in the sand and water baled out by means of piccottahs, as can be seen even in the neighbourhood of Madras City. Boat-loads of ripe coconuts, transported on the Buckingham Canal are in frequent evidence on the canal wharves. The topes in the proximity of Madras are, however, utilised not for producing the fruit but for yielding toddy, for which there is an un-ending demand from the thirsty labouring population of the big city. The Edakkainadu of Cheyyur and Chunampet Zamin-daris supply the metropolis with large quantities of the ripe coconut, required for the growing urban population for religious and culinary purposes, besides what is being supplied from the deltaic tracts by the railway. There is, however, no copra or coir industry developed in the east coast coconut plantations as in those of the west coast.

The casuarina, an exotic 'tropical pine', which has gained a naturalised citizenship, finds its ideal conditions in the sandy belt, and has proved itself the ideal type of tree for the region. Any watering or attention is required for just one or two seasons only, after which it flourishes mightily in the dry sandy soil without the need for any further attention.

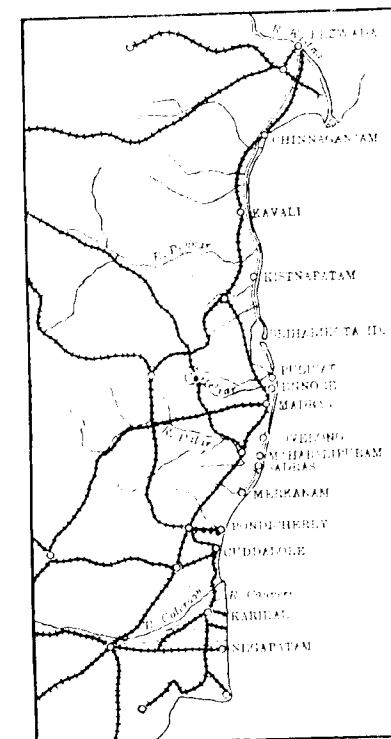
There is a steady and growing demand for its firewood in the towns of Madras, Pondicherry and Cuddalore on the coast as well as those inland; and the fuel problem of the coastal towns has been solved by the growth of this tree in the sandy belt and by the existence of the Buckingham Canal along it, even in its present neglected condition. So useful and profitable has been this tree as fuel for domestic and other purposes that its plantation has been extended to inland areas, especially near the banks of rivers like the Pennar and the Palar, where the soil is sandy loam. Cuddalore is an important centre, supplying seedlings of *casuarina* for large areas round about.

More important than its use as fuel is the way that this tree improves the soil permanently. Like the Leguminosae, the root nodules of this tree serve to fix the free nitrogen of the air, thereby improving the soil. Moreover, the fallen leaves, if they are wisely allowed to remain on the ground, turns to humus which mixes with the sand and forms an excellent loam on which good dry crops can be grown as well as grass. Thus after some repeated plantings of *casuarina* and the conversion of the soil into loam, the land can be turned to pastures which would support animal husbandry as a new industry in the region. Ignorance on this point is responsible for the clean sweeping of the plantations that is unfortunately being allowed in most places, the dried leaves being gathered by the women-folk for 'boiling' rice. One other advantage of the *casuarina* plantation along the sandy coastal belt is that it acts as a binder for the soil and as wind-screen, preventing the shifting of the sand by the agency of the wind and encroaching on the cultivated areas. This is analagous to the successful planting of the pine tree in the Landes region of south-western France for a similar purpose.

The cashew-nut tree is another important tree of monetary value that has done well in this sandy belt. But so far it is only in Nellore and South Arcot districts that these trees have been planted in any very large numbers and yields a considerable crop. An extension of the cashew-nut plantations is easily possible out-

side the districts mentioned above also, and will be highly profitable. The superiority of this tree over the *casuarina* lies in the production of a commodity of small bulk of relatively high value unlike the firewood whose transport would have been a problem but for the canal.

The post-tertiary formation, which comprises our present region, is at the farthest (seaward) end of a peneplain; and it is consequently sure to have a perennial supply of underground water with the water-table not far from the surface. A hydrographic survey of the region and the tapping of the underground water resources by modern methods of boring and pumping will help to extend the several plantations of this region.



Sketch-map showing the Buckingham Canal, Railways and coastal places.

The backwaters and lagoons have afforded facilities for the production of salt in several places by baling out the brine on to pans, allowing the water to evaporate, and then scraping out and collecting the salt. The existence of the several factories at Merkanam, Cavelong, Ennur and several other places in this region

as well as in other parts of the province accounts for the fact that this Presidency has been self-sufficient in the matter of the supply of salt without having to import the mineral at all. The Buckingham Canal has again been useful in the transport of the material to the city markets.

Fishing in the backwaters and in the open sea has been another natural industry of this coastal belt. The existence of hundreds of fishing hamlets, called Kuppams, along the sandy fringe, as can be seen from the one-inch maps of the region, shows how the bulk of the population living in this unpromising tract carry on their livelihood. Venturing in their frail catamarans into the open sea, these fisher-folk return home with their catch of the day. But their chief difficulty is the absence of quick transport from remote places to the city markets. Fresh fish is brought from Sadras everyday to Madras by motor cars. From Thada and Arambakkam stations on the East Coast Railway, the fish caught in Pulicat lake in the neighbourhood of those stations is sent by railway to the city. But elsewhere these facilities are not available, as most places in the region are away from road or rail. Hence much of the catch is converted into dried and salted fish, which is sent by boat along the canal to Madras. If the Buckingham Canal is deepened and widened, fresh fish could be sent to the city markets in quick motor boats. It has to be remembered that fish has its agricultural value as manure; and if it is also remembered that the fisher-folk who can venture in their frail craft far out into the open sea will form the backbone for the future Indian merchantmen and navy, the importance of the fishing industry cannot be sufficiently emphasised. A long stretch of coast-line, even though it may be very regular and unbroken, which is dotted with fisher-men's hamlets, is indeed from this point of view an asset for the land.

The existence of the *Buckingham Canal* and its utility have been incidentally touched upon above. But the subject requires a more detailed consideration here. The Canal runs for a distance of about 200 miles northwards from Madras to Pedda Ganjam, linking the metropolis with the Godavery and Kistna Canal systems, and for about 60 miles to the south of Madras to Merkanam in the South Arcot district. Practically, the whole of our region of study is connected by this canal, which links up the several backwaters and lagoons, and runs along or just behind the belt of blown sand. It has already been mentioned how the Canal has been useful for transporting salt, salted fish, firewood, and shells—

all of them products obtained in this region. Wherever feeder roads connect it with the interior, other produce is also carried through the Canal; e.g., from Maipadu and Krishnapatam in the Nellore District, rice is sent to Madras. Even from distant Tenali in the Kistna delta as well as from the Godavery delta rice and cocoanuts used to be sent in large quantities in former years; but the competitive rates have tended to discourage this trade.

It is a well-known fact that *water-transport* is considerably cheaper than land transport of any kind; and if heavy and bulky articles have to be carried over a good distance, the former stands pre-eminent, if no undue artificial advantages are available for the latter.

For the *better development* of the resources of the region under study, it is, therefore, necessary that the Canal should be kept in proper condition—deepened, widened, with the silt removed from time to time, so that it can be used even by motor-boats if necessary. The question is not one of constructing a new canal, but of improving and keeping in an efficient condition one already in existence. The capital expenditure that may be involved in such improvement is well worth it in view of the several expected advantages. Firstly, there is the increased volume of trade between the productive deltas and the capital city, which is sure to follow with better facilities for cheap and quick transport. Secondly, the industries and occupations of the coastal belt are sure to develop rapidly, leading to increased production; and the region will then be able to support a larger population than it does now.

But more spectacular than either, and certainly more remunerative in the long run, will be the development of a tourist industry. With the growth of quick motor-boat traffic, resort centres might grow at places like Ennore and Pulicat, drawing large crowds of visitors for jolly boat excursions and water sports, and not merely for snipe-shooting and fishing. What is required to popularise it is adequate advertisement. The growth of a tourist industry, as it has developed in western countries, is yet to take place in India; and when that development comes to happen, some of the lagoons and backwaters of the east coast, though inferior to those of Malabar, are sure to attract visitors, at least owing to their proximity to the Capital of the Province. An improved Buckingham Canal in proper condition has its part to play in that consummation.

Good slices of the hinterland of the Port of Madras have been taken away as a result of the development of the new harbours of Vizagapatam and Cochin; and if Madras is to hold her own in the world's trade, and not fall away considerably from the position which she had been holding, all parts of her remaining hinterland have to be properly developed; and the coastal belt discussed about is not without its potentialities, as has been shown in the paper. The tapping of the underground water resources, the extension of the plantations, the construction of feeder roads connecting with the interior, and above all, a proper improvement of the Buckingham Canal will convert this maritime belt so near the Capital into an important, better populated region.

LIST OF REFERENCES

(N. B.—Much of the material was gathered first-hand by personal visits to several parts in the region.)

The following are some of the books and Journals that were specially referred to:—

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Wadia's Geology of India.

Prof. H. Narayana Rao's paper on the Geological Evolution of the Madras Region (Vol. I, No. 2 of the Journal of the Madras Geographical Association—1926-27).

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Manual of Chingleput District.

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District Atlas of the Madras Presidency.

One-inch maps of the coastal belt.

Madras Administration Manual.

*The Industrial Crops of Kerala

By

MR. GEORGE KURIYAN, B.Sc. (LONDON.).

In Sanskrit literature, from the earliest times, the region lying west of the Western Ghats has been designated 'Kerala'. The Origin of the word is very difficult since the authorities differ considerably on the point; it may, as the Rev. Mr. Foulkes points out, be the same as Chera or the name might have had its origin in the word Keram (a word which denotes the coconut). What ever the origin of the word may be, in popular parlance at the present day, it denotes the region lying to the west of the Western Ghats where Malayalam is the predominant language.

Kerala has a certain peculiarity of its own: it lies on the south-western corner of India and is bounded on the west and south by the Indian Ocean and to the east by the Western Ghats. The northern boundary has not been the same right through. Although the district of South Kanara has much in common with Kerala, both geologically and climatically, yet the language is Canarese, which has little in common with Malayalam, the customs, manners, mode of dress especially of women, the devolution of property etc., are all different. It has therefore been considered advisable to limit the scope of this paper to the cultural region of Kerala rather than to the whole geographic region lying to the west of the Western Ghats. The northern boundary of the region may therefore be taken as the district of S. Kanara. Climatically this region is different from the rest of India with a very high summer rainfall (generally more than 80", in parts even 150") and with a moderately heavy rainfall during the season of the retreating monsoon (about 30 to 40").

Kerala comprises of the three following political units:—

1. The district of Malabar in British India, area 5792 sq. miles; population 3,533,944.

2. The native state of Cochin, area 1480 sq. miles: population 1,205,016.

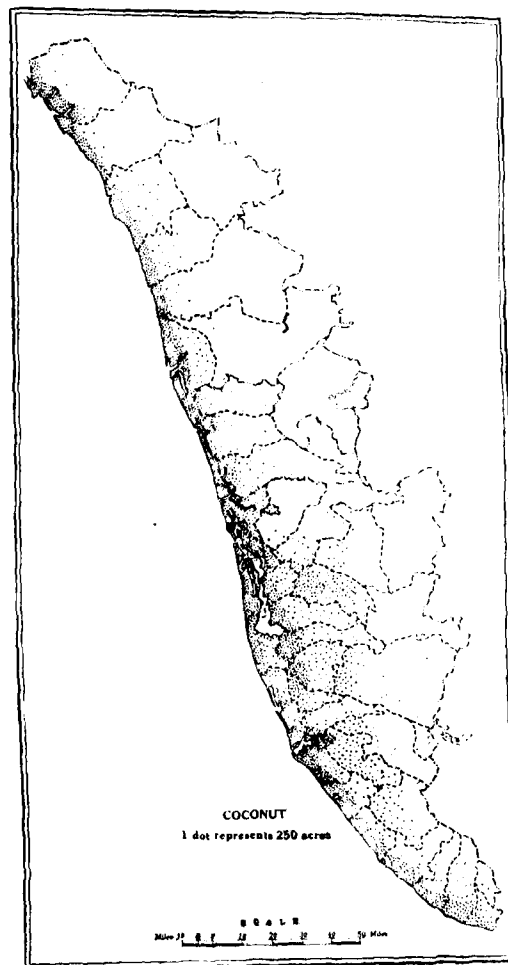
* A paper read before the Geology and Geography Section of the Indian Science Congress at the 24th Session held in Hyderabad, January 1937.

3. The native state of Travancore, area 7625 sq. miles ; population 5,095,973.

Total area of Kerala 14,897 sq. miles.

Total population 9, 834, 933.

The density of population in Kerala is 660.9 persons per square mile but it varies very considerably within the three political units, Cochin being the most dense with a density of about 814 persons per square mile, Travancore being the next with a density



of 668 persons per square mile and Malabar having a still lower density of only 609.9 persons per square mile. Nevertheless it should be borne in mind, that these densities are far in excess of the average densities of the other provinces of India. (viz. Madras

Presidency 329 persons ; Bengal 646 persons ; United Provinces 456 persons ; Punjab 236 persons ; North West Frontier Province 179 persons ; Bombay 176 persons ; Central Provinces 155 persons ; Assam 148 persons ; Burma 63 persons ; Baroda 299 persons ; Hyderabad 175 persons ; Mysore 233 persons, etc.). This indicates very clearly that the region has some natural advantages by which she is able to support such a high density of population. Climatologically she is particularly blessed in that there is no season of drought, irrigation invariably is unnecessary (the exception being the Nanjinad rice of south Travancore) the temperature is high, right through the year, so that, agricultural operations are carried on for all the twelve months of the year. Possessed as the region is with a very suitable climate, it is by no means surprising that the most important activity of the population is agriculture. Although agriculture forms by far the most important occupation of the people, (more than $\frac{3}{4}$ the working population or nearly $\frac{1}{2}$ of the total population is engaged in agriculture) in this paper, I shall attempt to give some idea of the cultivation of, and industries associated with, some of the special crops like coconut, tea, rubber, pepper, cardamom, coffee etc.

COCONUT.

Acreage of Coconuts.

	acres
Malabar	.. 335,351
Cochin	.. 68,233
Travancore	.. 587,464
Total	.. 991,048

Number of persons employed in the cultivation of Coconuts.

	persons
*Malabar	.. 2,145
Cochin	.. 21,284
Travancore	.. 166,916
Total	.. 190,345

190,345 persons are employed in the cultivation of coconuts.

*The total number of persons employed in the cultivation of coconuts is only 2,145 in Malabar according to the latest census returns. The total area under the crop is 335,351 acres. It is unlikely that 2145 persons could cultivate such a large area, and probably there are several persons who cultivate coconuts, but who are not returned in the census statistics as cultivators of coconuts as it forms only a part of their occupation.

Among the special crops cultivated in the region, coconut is the most important one and it occupies nearly 90% of the total area under these crops. "There is no essential requirement of the people which some part of the tree cannot supply. Apart from the several uses of the chief products, viz., coir, copra, coconut, oil, oil-cake, the hollowed trunk serves as a canoe, the nut forms a staple article of diet and a very wholesome one, the leaves may be used for many of the purposes of paper, are frequently employed as thatch and for the manufacture of brooms, baskets, umbrellas, thattis, and fans and utilised as crude torches in a dried form, or burnt as fuel, either as it is, or in the form of charcoal. In addition, the fresh or fermented juice of the stem is consumed as a beverage, by evaporation it is made into jaggery and by subsequent treatment even sugar is obtainable. When distilled, the toddy becomes arrack and finally vinegar." It is clear that a plant, the produce of which can be put to such wide and varied uses, is bound to play an important role in the economy of any region where it is grown.

CLIMATE AND SOIL.

Good crops are not obtainable from any region where the climate is characterised by prevailing cloudiness. The lowest tolerable temperature for the tree is 71.6°F (22°C) but in the regions where the temperature is at least not less than 3°C more than this, the production is low, i.e., an average temperature of 77°F (25°C) is the minimum. A temporary fall of even 15°C does not do much harm. Semler suggests 10°C as the lowest tolerable temperature. However the tree thrives best where it is most constantly warm. So long as the heat is not too drying, it is unlikely that coconuts are ever injured by too high temperatures. Latitudinally the limits are about 20°S and 20°N of the equator, but in Madagascar in 25°S they are grown and even in Lucknow (27°N) they are found, but in either case the trees are not very productive.

The limit in altitude depends on latitude; in general it will grow at the greatest altitudes, on, or a little north, or south, of the equator. On a commercial scale however, they are found only up to an elevation of 300 metres (1000' approximately) and as one proceeds further away from the equator, they are confined more strictly to the lowlands.

Moisture is more important than temperature. Conditions should be such as to permit the most active possible transpiration

without the tree suffering from loss of water. In a part of Ceylon where the coconut industry is thriving, the rainfall is 79" and this is usually considered to be the representative rainfall. In Java where the rainfall is 3 metres i.e., nearly 120" the tree is found to thrive. On the other hand coconuts also thrive in Puttalam (Ceylon) where the rainfall is only 50" (127 cms.). Zamboanga in the Philippines has the best coconuts and the rainfall is less than 40" (1 metre).

High atmospheric humidity is commonly regarded as beneficial to coconuts, but this is justified only in so far as too dry air may result in the trees losing water faster than the roots can replace it. It is perhaps best to state that dryness of air never hurts the coconut except when it is accompanied by the dryness of the soil. Not humidity, but really dryness of air is really favourable for coconuts whose roots are always and adequately supplied with water. Very moist air not only checks transpiration (and therefore poor supply of mineral food) but is an indispensable condition for the spread of at least a part of the pests causing bud rot. Too great humidity (as reported from Deli, Sumatra) causes a premature decay of the fruits.

The wind increases the transpiration and hence as long as enough water can be supplied by the roots, it is beneficial; but beyond this it is injurious to the tree. Where the soil is dry, but little wind is desirable, where the roots are constantly well watered, the atmosphere must be windy.

Coconut roots will not grow into water and they must always have a reasonable supply of water available for absorption. Exceedingly porous soils are usually unsuitable as they are too dry, nevertheless, the most porous soils can be used, if for some reason or other, water is available. This is the condition which actually exists on the beaches. Soils with an impermeable hard pan near the surface are unsuitable for coconut cultivation, because during the rains, they become too full of water and injure the roots. Very stony soils are unsuitable in general as they are sterile and dry.

The best soils perhaps are the soils of the deep alluvial plains, rich in food easily worked, and which permit an excellent root system to develop. It has been observed universally that sandy shores (or shores of backwaters as in Kerala) are very suitable because they have behind them higher country, and the rainfall, which falls in this higher country, sinks into the soil and then moves in the soil towards the sea, carrying with it food which it dissolves

as it moves. In times of drought it moves in more limited quantities as the water is scarcer, but the sea shore itself being the place where such water comes close to the surface of the ground, is the last place to suffer from the scarcity of it. So long as there is enough water in the soil any where in the region behind the beach to permit it to move to the ground, the beach itself will contain ample available fresh water and in general the less of this water there is, the richer it is in plant foods. Behind the lagoons or backwaters, coconuts thrive very well as is evidenced by the distribution of the coconuts in Vaikam taluq, Changanacherry taluq, Kottayam taluq, etc. Chirayinkil, Karaunagappally and Quilon are taluqs bordering on the sea and hence one notices the intensity of coconut cultivation.

It is moving water in the ground which is primarily responsible for the high development of the trees on shores and therefore, the country sloping upward from the sea even for great distances make good coconut country so long as there is still higher ground at the back of them from which they can derive a constant supply of soil water. The country around the bases of mountains, whether near the sea or far removed from it, is therefore good coconut country. Kinjirappally and Pathanamthitta are good examples of this in Travancore. The cultivation of coconut has in recent times been carried from the sea board division into the interior, so far as the valleys and hills of the submontane region. Even in the best of times the cost of transport is too heavy for the cultivator in these regions to derive any benefit from the husk. The whole output goes to waste.

In general soils which contain free water are unfit for the cultivation of coconuts, still if the level of the land is such that water is moving in the soil, then coconut will thrive, e.g., in areas bordering paddy fields, the level of the coconut plantations is only 2' or 3' higher than the paddy fields, but all the same, the subsoil water is moving into the lower levels of the paddy fields which explains the growth of the coconuts. There is a wide spread belief that the coconut needs salt for its development (probably because they thrive on the sea shore) but this does not seem to be true. The sea beach even though it be beside the ocean is found to be as free of salt as the land which lies above it. The coconut roots can endure salt, but this does not mean that it either wants it or can make use of it.

Proper physical composition of the soil is more important than chemical composition, if only the coconut plants are able to secure sufficient water.

In Kerala, out of a total cultivated area of 4,060,778, acres, coconut alone occupies 991,048 acres i.e. nearly 20 to 25% of the cultivated area. It is not untrue to say that the rural economy of the whole region of Kerala is dependent upon this tree and as has been suggested before, it is not improbable that the land itself got this name from the tree.

There are many industries associated with the coconuts, the most important however are coir and copra. The chief peculiarity of coir ropes is its elasticity—the coconut fibre will stretch fully 25% without breaking. The exact amount of stretch which ropes made of it will stand depends upon the mode of manufacture, but in all cases, they stretch better than ropes made of any other commercial fibre. It is again less subject to decay. Of the fibres, the most resistant to decay, is Arenga and the next is coir, but Arenga (sugar palm) is not an article of general commerce. The same coconut trees cannot be made to produce coir to the best purposes of oil of the highest quality; one or other of the product must in a measure be sacrificed. As a general condition, Copra or the oil is more valuable.

The first step in the production of the fibre is the removal of the husks from the nuts and is therefore the same as the first step in the production of Copra. The husks are then macerated by soaking them in fresh water, stagnant water, or salt water, until the fibre can be removed easily from the waste matter in which it is embedded. When the fibre is to be cleaned by hand and the retting is done in clean fresh water, the husks are said to be left in it for at least several months and sometimes for as much as a year and a half. In salt water maceration is more rapid and in stagnant water still more so. (The beaten husks require only a period of 2 to 3 weeks in stagnant salt water.) The maceration is hastened by boiling or skinning the husk, and it is a common practice to hasten the decay by opening the husk before soaking begins, so that the water may immediately penetrate the interior. If the soaking stops soon enough, the fibre is hard and clean, but if it continues too long, the fibre becomes dark and loses its value and loses also its strength by decay. The time for cleaning should therefore be as short as possible. The husks after soaking are beaten thoroughly and then scraped and combed. The more thoroughly this is done the better price the product will bring.

To-day however, machinery has become important, the husks are soaked in concrete tanks in fresh water for two or three days, they are taken out and subjected to a mechanical combing and then are hand-combed and are finally graded. (The husk of 100 good

nuts will yield 68 to 79 kilograms of coir if the manufacture is by hand and about 89 kilograms in well regulated factories.)

In spite of the diminishing prices of coir in the near past, the quantity of coir yarn produced has not diminished. Matting is manufactured in Alleppey (consumes 40% of the yarn production of Travancore). The chief Indian markets for the Coir yarn are Calcutta and Rangoon. Outside India, United Kingdom is the largest consumer. Exports are made to United Kingdom, Germany, Belgium and Holland. Travancore produces some of the finest types of yarn with a practical monopoly in certain grades of coir yarn. Its chief competitor is the Galle yarn of Ceylon. Calicut yarn also has now begun to compete with Travancore yarn.

Copra is the most important of the products of the coconuts. The best yield of copra will be obtained when the majority of the nuts are slightly beyond their prime (the fibre loses a considerable part of the value when the nuts are beyond the prime). Although there are 3 different methods of drying copra—sun drying, grill drying or smoking, and kiln drying—in Kerala the only prevalent method is the sun drying process which requires good exposure to the sun for 4 to 7 days and produces an article of high quality if the weather is sunny. If however, rain falls while the copra is drying, it is permanently damaged unless it is protected from the rain. Care in drying the copra explains the high quality of the Cochin Oil.

	Number of Workers.			Total Industrial workers.	Approximate percentage of workers of coconut industry to total workers.
	Male.	Female.	Total.		
Malabar	3,669	40,124	43,793	221,058	20%
Travancore	43,642	82,785	126,427	351,076	36%
Cochin	11,570	25,887	37,457	118,546	33%
Total	58,881	148,796	207,677	690,680	33 $\frac{1}{3}$ % nearly $\frac{1}{3}$

These statistics indicate very clearly the predominant part which women play in this industry; more than $\frac{2}{3}$ the workers are women. Preparation of the coconut fibre, and the spinning of the coir yarn are carried on mainly as cottage industries (nearly 95% of the coir made is outside the factories). Most of the work can be carried on in the home and hence the preponderance of the female element. The weaving of mats and mattings out of coir yarn prepared by the cottage workers is done largely in the factories where more men than women are employed.

Negapatam : A Seaport Town of South India

By

MR. S. R. PANDYAN, B.A., L.T., DIP. IN GEO.

SITUATION.

Negapatam is a minor port on the East Coast of peninsular India, situated on the seaward side of the delta of the Cauvery, about 170 miles South of Madras, in 10°45'N latitude and 79°5'E longitude.

Negapatam or Nagapattinam must have been a port from time immemorial. According to the ancient Tamils, a town situated on the coast (நெட்டிப்பட்டம்) was called a "pattinam," e.g., Sennaipattinam (Madras), Sathurangapattinam (Sadras) and Massulipattinam (Masulipatam). The prefix "Naga" to "pattinam" has led some scholars to conclude that it was the chief town of the Nagas—who came from Lower Bengal and settled somewhere here. The date and cause of their coming is obscure. They are supposed to have been a fierce and hardy people of Turanian descent, and the ancestors of the present Kallars and Maravars.

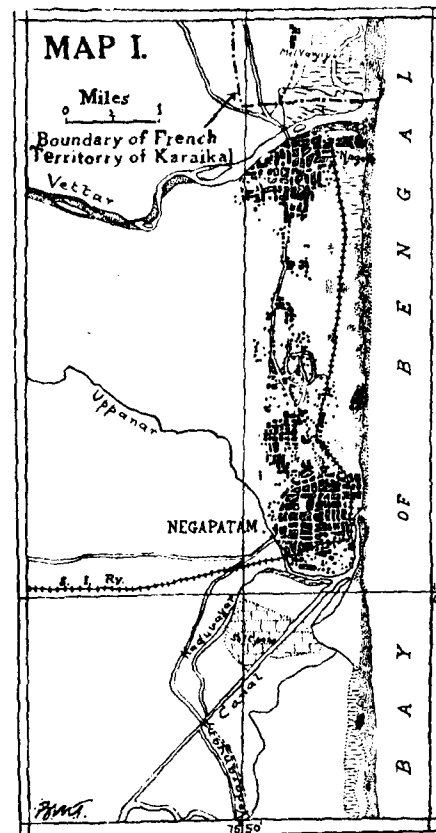
The situation of the original fishing village at the mouth of the river Kaduvaiyar made it possible for boats to go up and down the stream and to carry on a brisk trade with the interior in coastal products like salt and dried fish. Such a situation was of very great advantage in early days. (Map I.)

As the village stood at the confluence of two rivers (Kaduvaiyar and Uppanar) the scope for river traffic was larger in proportion.

The availability of fresh water very near the coast, in fact within 200 yds. from the sea, must have been an additional advantage.

The presence of big sand-hills on the coast gave shelter to the fishing folk in times of bad weather. Even to-day Nambian Kuppam—the fishing village in Negapatam, stands on a huge sand-dune 40-50 ft. above sea-level.

Negapatam lies due east of Tanjore which was the Chola capital for some time. So there must have been a great impetus for its growth in Chola times. Just as Mahabalipuram was the port of the Pallavas, Negapatam served as the port of the Cholas.



LATER DEVELOPMENT OF THE TOWN.

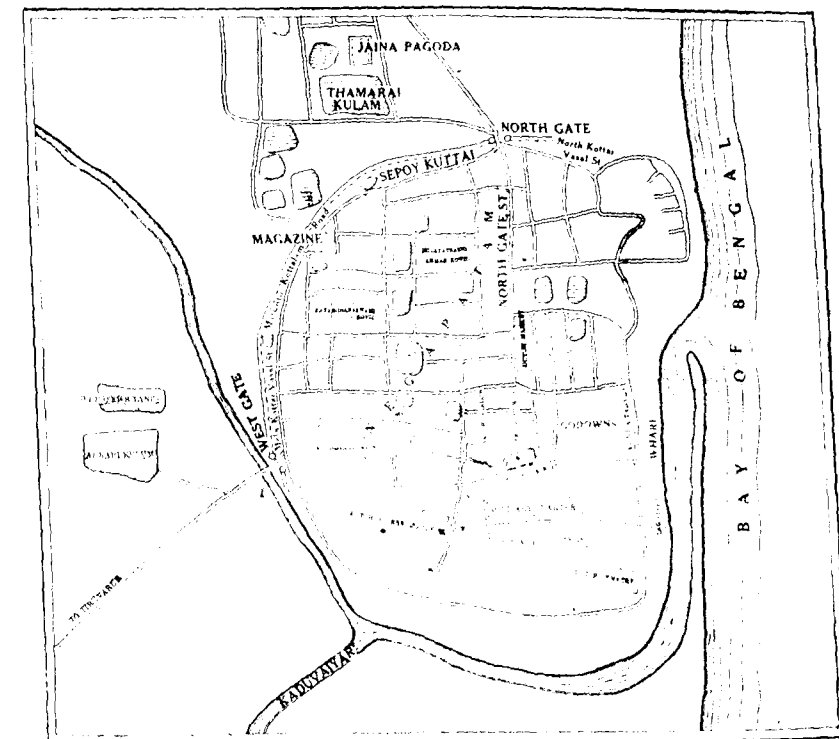
(i) *Under the Cholas.* There are references in the Tamil works like "Periapuranam", and "Thevaram" to Negapatam as the political capital of a Chola province. At this time, it was not only a port and a provincial headquarters, but was also an important seat of Buddhist worship. We learn that the Buddhist temple at Negapatam was endowed by Rajendra Chola I in 1006 A.D. and it was built by Chulamanavaram, king of Kidaram, possibly in South of Burma or Siam.¹¹ There are also Burmese inscriptions of the 15th Century mentioning the visit of a party of Buddhist priests from Pegu. A remarkable fragment, probably of the famous Buddhist pagoda of the 11th Century survived till 1867,

when it was pulled down by Jesuit Missionaries to build their college on the site. Tradition says that a Vaishnavite saint carried away the gold images of Buddha and used it for some other purpose. But we have few historic records as to the growth and development of the town until we come to the advent of the Europeans.

(ii) *Under the Portuguese (1612-1660).* The first European settlers in Negapatam were the Portuguese and they called it, "The city of the Coromandal"—perhaps their biggest station on the East Coast. But not much is known about their time.

(iii) *Under the Dutch (1660-1781).* In 1660, the Dutch got possession of it and in 1689 made it the seat of their governor. A

II Some Important Buildings of Dutch Times.



-  Tanks.
-  Structures that still exist.
-  Structures that do not exist.

new castle was built at a cost of 1,600,000 guilders which far surpassed Fort Geldria (Pulicat) in size and strength. At the time

of the Austrian Succession War, on the coast lay three important cities—Negapatam under the Dutch, Pondicherry under the French, and Madras under the English. Each was a place of large trade, each was inhabited by some 20,000 to 30,000 Indians, who had gathered themselves round the small group of Europeans 400 to 500 in number, who formed the dominant element; each was a place of reputed strength."² The Dutch have left a deep impress on Negapatam. There still remain several structures erected by the Dutch like (1) The Flag Staff. (2) St. Peter's Church. (3) The Holland Bungalow. (4) The Governor's House. (5) The Dutch market, etc. The names of important roads which originated in the Dutch times still continue. e.g. (1) Holland Street. (2) North Gate Road. (3) West Gate Road. (4) Marunthukothalam Road. (5) Pandagasalai Road, etc. (Map. No. II).

(iv) *Under the English* (Since 1781). During the American War of Independence, England declared war on the Dutch republic (in 1780) and in the following year, the English captured Negapatam and made it their own. Even to-day Negapatam is an important town and the head-quarters of the East Tanjore District.

Geology of the Coast. The soil is fluvatile alluvium of varying composition. The coastline is smooth and unbroken, with the sandy beach and a broad continental shelf. There are huge sand-ridges just near the sea varying in height from 5—50 feet. "The greatest elevation is attained by an isolated sand-hill, on which is built Kuppam or fishing village of Negapatam. The



General view

sand-hill in this case is fully 50 ft. above the surrounding beach, and commands a fine view over the level country all round."³

There are no general indications of any tendency on the part of the sand ridges to advance inland. This comparatively stationary condition of the blown sand-hills appears to be caused by the petty effect of the monsoons. Though the North-east monsoon blows on the coast with much greater force than the South-west, its transporting powers are negated by the heavy rains, which by saturation for a considerable time effectively bind the loose particles of sand. The sand hills have a steep slope facing the sea, and the land-ward side is backed by bushes and palmyra palms.

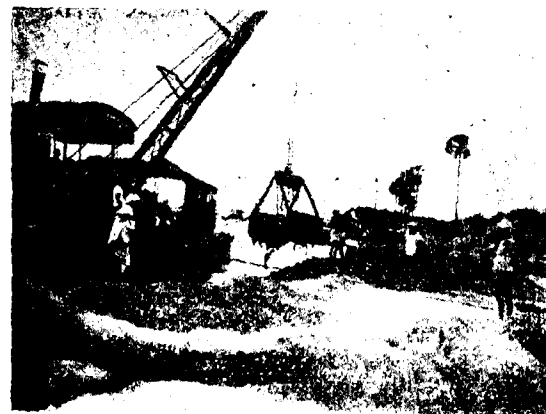
There is a lateral current near the coast which carries away the silt from the river Kaduvaiyar and retards the formation of a delta. But the river has built up a long sand spit, about half a mile long. The drift to the North is felt even when one is bathing in the sea at Negapatam. Last November (1935) during the cyclonic weather, the river cut across the spit at A and entered the sea.



Landing Cargo

Much money had to be spent on blocking the newly made entrance by sand bags, and again diverting the river via the old channel. This step had to be taken because the wharf is built just opposite to the tip of the sand-bar. The river has to be dredged every now and then to keep it deep enough for boats.

When we come inland leaving the sand-hills at the coast, the topography of the land is flat and monotonous for miles, typical of the deltaic tract.



Dredger at work

CLIMATIC STATISTICS.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual.
Mean maximum temp. ° F.	81.8	84.4	88.7	92.5	97.3	97.1	95.9	93.7	92.5	88.4	84.1	81.5	89.0
Mean minimum temp. ° F.	70.8	72.1	75.5	79.0	80.2	79.2	78.2	77.3	76.5	75.9	74.1	72.1	75.9
Mean monthly temp. ° F.	76.3	78.3	82.1	85.8	88.8	88.2	87.1	85.5	84.5	82.2	79.1	76.8	82.9
Mean monthly rainfall, inches.	1.60	0.84	0.32	0.72	1.9	1.46	1.89	3.53	3.74	10.15	17.3	10.9	54.37
Mean No. of rainy days.	2.4	0.8	0.5	1.0	2.1	2.7	3.4	5.5	6.0	10.4	13.1	9.1	56.9
Monthly distribution of cyclones in the Bay of Bengal, 1877-1903.	0	0	0	1	8	4	0	0	6	8	17	6	50

THE CLIMATE OF NEGAPATAM

The daily, monthly and annual ranges of temperature are very low, the annual range being only 12.5°. This is the direct result of the amelioration of the climate by the sea. The hottest month is May (88.8°F) which is not too hot for 10° latitude, and the coolest month is January (76.3°F) which is also not so cool. So we can call the climate equable. The temperature steadily rises from the end of January till the end of May and then begins to fall slowly and steadily.

Negapatam receives on an average 54.37" of rain per year.

About 70% of the annual rainfall falls in October, November and December.

NEGAPATAM: A SEAPORT TOWN OF SOUTH INDIA 297

The heavy winter rainfall is due to the configuration of the coast; the winds passing over the Bay, absorb moisture which is precipitated as rain on the coast.

Negapatam receives very little rain from the South-west monsoon.

The rain is not well distributed throughout the year, but is concentrated in the last three months of the year.

Irrigation is needed for a second crop in the year.

Negapatam has on an average 60 rainy days, i.e., $\frac{1}{6}$ part of the year.

The sky is cloudless for the greater part of the year, and so climatically, the surrounding areas are well suited for the cultivation of tropical crops especially rice.

On some occasions, during the breaking of the monsoons, very heavy falls of rain occur sometimes, in a single day. Between 1891—1920, it rained 14" to 15" on one occasion. These heavy rains are due to the passage of cyclones which occur in this part of the Bay of Bengal.

CYCLONE TRACKS

Most of the cyclones visit Negapatam in November or December. There is an interesting old record vividly describing the havoc caused by a cyclone in the "Selections from the consultations of the Agent to the Governor and council of Fort St. George—1681." It says, "In Negapatam happened the storm on the same three days with much great force, demolishing six bulwarks of the fort and the greater part of the houses, whereby was sustained most losses, and the Dutch soldiers those three days and three nights as the storm lasted, went about those fallen houses stealing all they could find and it is like-wise said they stole much goods out of the company's godowns for which they are now doing justice, and those who robbed the houses received many wounds by the owners thereof, who defended the doors from those who would enter by force. It is writ for certain that in Negapatam more than 2000 persons put themselves into a pagoda and it fell and killed all of them. On the sea-side, the fishermen of five towns retired into one which was the highest and the wind and sea carried it away and they all died and they writ it, in the jurisdiction of Negapatam died 14,000 souls and it is to be noted that in Porto-Novo the storm came from North-east and North and in Trangambar from North-east and East and in Negapatam from the South. The distance being 12 leagues and all at one time the same 3 days and three nights."

Winds. The South-west current sets in during April, and is strongest in June i.e., at an average velocity of nearly 200 miles per day. The wind continues till September. In October it dies away. At the beginning of November the North-east monsoon sets in though not with the strength of the other current and continues till the end of January after which it weakens, and by the end of March has veered round through the South-east, to the South-west again.

Humidity. A very high percentage of water-vapour is always present in the atmosphere: More than 50% on summer days, and very near the saturation point on rainy days, due to the coastal situation. The moist heat is considered bad for people with lung troubles.

THE NEGAPATAM TOWN (MUNICIPALITY).

The town of Negapatam occupies an area of 5½ sq. miles, which is divided into six wards for purposes of municipal administration. (The map shows the different wards). The town proper comprises Wards No. I, II and III, while Nagore is divided into two wards (No. V & VI) and the intervening area has been constituted into a separate Ward (No. IV).

1871	1881	1891	1901	1911	1921	1931
52,175	54,745	59,221	57,190	60,168	54,016	48,527

In the year 1866, Negapatam was constituted as a municipality because it had 50,000 persons. From 1866, the population had been growing steadily till 1911. Since 1911, there was a decrease due to the people emigrating to Malaya. There was a further decrease of 10% of the population as a result of the removal of the S. I. Ry. workshop from Negapatam to Golden Rock.

It had employed 2,700 hands and repaired and rebuilt rolling stock of all types. The work-shop was divided into many departments. There was the erecting shop where 320 men were employed. Here the locomotives were repaired and rebuilt; engines were received in dismantled condition from England, and put together. There were 1,300 men in the carriage and waggon shops, where new carriages and waggon-bodies were built. Besides these, there were the machine shop, the boiler shop, the smith's shop and the foundry.

The removal of the workshop meant a decrease not only of the 2700 people employed in it, who went away to Golden Rock but also of their families and those who depended on them like their

servants, the milkmen, the retail shop keepers, etc. It was a great blow to Negapatam.

Out of the 48,527 people (1931 census) 34,340 or 70% are Hindus; 10,958 or 23% are Muhammedans and 3,206 or 7% are Christians.

Communities	1921	Change in 1931.
Hindus	37980	3640
Muhammedans.	10759	+ 194
Christians	5381	2175

There has been a decrease in the number of Christians and an increase in the number of Muhammedans between the years 1921-31. The decrease in the Christian population is mainly due to the removal of the S. I. Ry. workshop which took away with it many of the Europeans and Eurasians who had been employed in it, as well as their servants, who were also many of them Christians. The exodus of the Europeans meant the exodus of their servants. Most of the Mohammedans of Negapatam are merchants in Malaya, whose business suffered heavily during the recent serious depression of trade, and also as a result of the slump in rubber production; consequently many of them came back to Negapatam, closing their Malayan businesses. So there was an increase in the Mohammedan population.

The distribution of the various communities in Negapatam is typical of an Indian Coastal town. The most striking feature is the relative proportion of Christians to others 10% in 1921, and 7% in 1931. Taking India as a whole, out of 350 million people, there is not even 2½% of Christians. The relatively high proportion of Christians in Negapatam is worth noting. It is due to the following reasons.

(1) For about 190 years, the town was under the Portuguese and the Dutch who tried their best to convert the people to their faith. That is why we find a high percentage of Christians as in the other Coastal towns.

(2) Many important officials of the Government and officers in the workshop were Europeans and so their servants too, who usually belonged to the depressed classes, became Christians.

(3) The situation of the Velangani Church, five miles South of Negapatam is one of the causes for the high percentage of Christians.

To-day Velangani is an important place of pilgrimage for the Roman Catholics, and Christians from all parts of the country come there during festival occasions. Negapatam is the nearest railway station to Velangani.

(4) We have records to show that Francis Xavier made converts in Negapatam about the middle of the 16th century. Caesar Frederick who came to Negapatam in 1570 says, "The citie



Velangani Church

belongeth to a noble man of the kingdom of Bezenegar being a gentile. Nevertheless the Portugals and other Christians are all intreated there, and have their Churches there with a monasterie of Saint Francis' order with great devotion and very well accomodated with houses round about."

Muhammedans too are numerous in Negapatam—20% in 1912, and 23% in 1931, which is a high percentage when compared to South India as a whole.

(1) It is said that they are colonists from Arabia, who emigrated from their native land in the early part of the 18th century in consequence of the tyrannical sway of Hijajben Yasef. On first settlement they took women from among the lowest classes of the natives for their wives, consequently the present day Muhammedan population is of mixed origin. They are Tamil speaking and have the honorific title of "Marakkayar." They are peaceful and industrious in striking contrast to the frequently turbulent Moplas of the West Coast.

NEGAPATAM: A SEAPORT TOWN OF SOUTH INDIA 301

(2) Some of the Muhammedans are the descendants of the Hindus who were forcibly converted to Islam by Tippu Sultan.

(3) The tomb of Miran Sahib at Nagore, endowed and built by His Highness Raja Sarabhoji in 1814, became the nucleus of a Muhammedan settlement.

Pilgrims from all parts of the Presidency and Malaya visit this place.

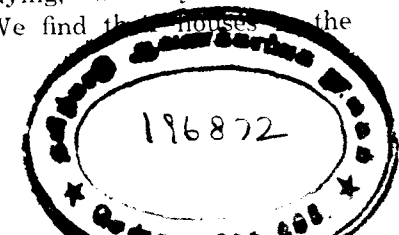
DISTRIBUTION OF THE IMPORTANT COMMUNITIES IN THE VARIOUS PARTS OF THE TOWN (MAP NO. III).

A. Hindus. The Hindus mainly fall into two classes namely, (1) The Brahmins, (2) The Non-brahmins. The Non-brahmins are again divided into Sub-classes like. (1) The untouchables, (2) Chetties and other trading castes, (3) land holders and cultivators as Reddies, Pillais, Mudaliars, Naickers, etc. (4) The lower classes like Kallars, Pattanvars, etc., who are mostly labourers.

The Brahmins. The Brahmins belong to the priestly class, and according to Indian tradition, they are supposed to have come out of the head of Brahma the creator. The Aryans were divided into 4 castes, of which the Brahmin came first. Dr. Caldwell thinks that "Brahmins are a perfectly pure, unmixed race." But such a statement is questioned from all quarters. All that we can say is, as the Tanjore Dt. Manual says, "They are the least affected by the occasional taint." As the Brahmins belong to the priestly class, they are always found in the vicinity of temples. We see the same phenomenon in Negapatam. The streets located near Sundaraja Perumal Koil, Sattaiyapper Koil, Naganatha Swami Koil, Maleswaraswami koil, Neelayathashiammon Koil, Venkatachalapathy Swami Koil are all Brahmin Streets.

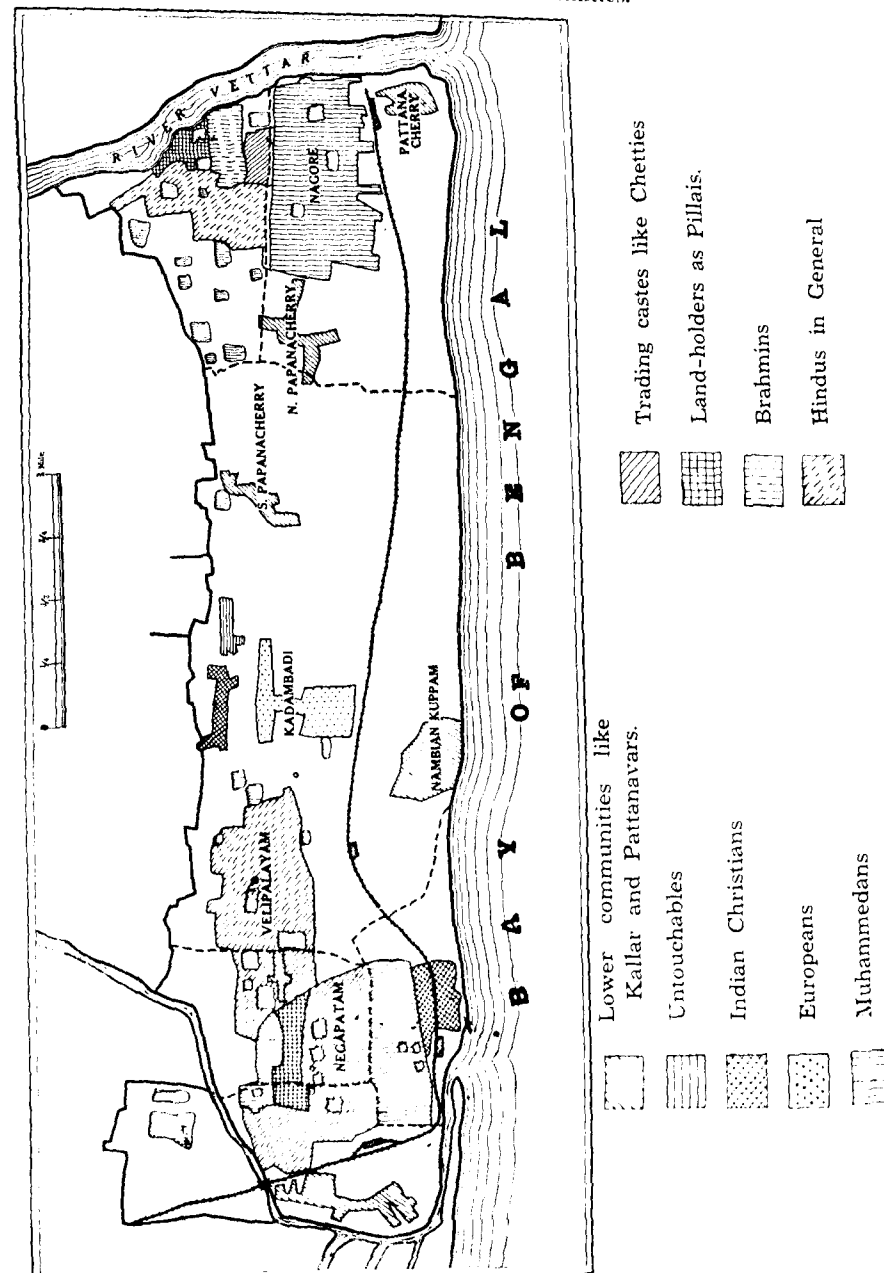
The Non-brahmins: (i) The Untouchables. The untouchables or the Adi-dravidas as they are called are few within the Municipal limits. As their name indicates, they live away from the caste Hindus. Their dwellings are found mostly to the West of Kadambadi where only European officials live. They are usually servants of the European officials. Some of them are Christians, while the rest are Hindus.

(ii) *Chetties and other trading Castes.* Chetties mostly reside in the business areas where they carry on their various kinds of trading, well illustrating Christ's saying, "where your treasure is there will your heart be also." We find the houses of the



bazaar streets of Negapatam, Velipalayam and Nagore, and also in streets adjoining it.

III Distribution of Communities.



peaceful) Land holders and Cultivators: (Reddies, Mudaliars bulent Naickers, etc.) The urban population of Negapatam are

mostly traders, merchants, and people employed in industries and other occupations. Only 17·2% are agriculturists. So this class forms only 17·2% of the population. As the lands that are cultivated lie to the West of the town, they live mostly in the Western part of the town. But an exception is found in the case of North and South Papanacherry where there is much market gardening by the cultivators who live close to their fields in that part of the town.

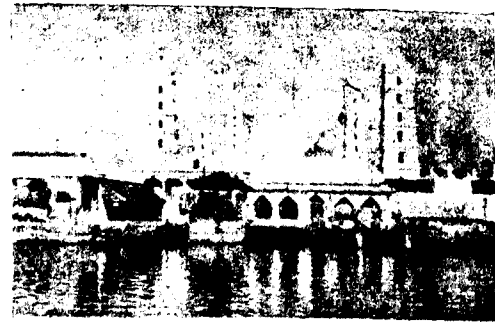
(iv) *The Lower classes:* (Kallars and Pattanavars). *Kallars.* They belong to the poorer classes who did not originally belong to the town. They came from the surrounding villages with their families and settled here. The men work as coolies in the harbour, railway station, and elsewhere in the town. The women are very energetic and hard working. They go about the town hawking gram, peas, rice, buttermilk, vegetables, etc. This sort of selling in retail is completely monopolised by Kallar women.

The Pattanavars. The Pattanavars are the fishermen of Negapatam. Their calling forces them to live on the coast. In Negapatam there are three small fishing villages.

- (1) Pattanacherry in Negapatam.
- (2) Pattanacherry in Nagore.
- (3) Nambian Kuppam.

The names of all the three villages are self-explanatory. "Kuppam" in Tamil means a fishing village. Also Pattanacheri means a place where fishermen live. The major occupation of the Pattanavars is fishing. To-day many of them are employed as boat-men by the Madura Co., who are the local shipping agents and possess more than a hundred boats. These fishermen are very capable boatmen. The whole village i.e., Pattanacherry in Negapatam proper is Roman Catholic by Religion, while the people of the other two villages are Hindus. Perhaps they became Christians at the time of the Portuguese or the Dutch. They are uneducated, but healthy and hardy people.

The Muhammedans. The Muhammedans of Negapatam are mostly merchants and sailors. But there is also another class—the priestly class who call themselves the "Sahibs." But they are only a few in number, who mostly live near Nagore Darga (Mosque). They are supposed to be the descendants of Mira Sahib who is interred there. Their mother tongue is Hindustani.



Nagore Durga.

The other section of the Muhammedans are all traders and merchants. They call themselves "Marakkayars" and "Malumi-yars". Most of their names are like this :—

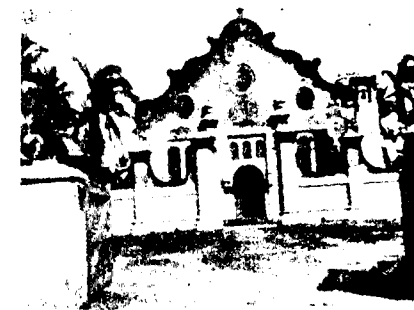
- (1) Packir Malumiyar.
- (2) Eesu Malumiyar.
- (1) Ahmed Marakkayar.
- (2) Ghouse Marakkayar.

In Tamil "Marakkayar", and "Malumiyar" mean the same thing. "Marakalam" (மரக்கலம்) means a ship and "Marakkayar", a sailor. So also in Tamil "Malumi" (மலுமி) means a sailor. Most of their trade is with the Straits Settlements, and every family has one or two of its members in Malaya. So they live very near the godowns. They do not participate in the local retail trade which is largely carried on by Chetties and other allied classes.

The Christians. The Christians fall into four classes.

- (1) The Europeans.
- (2) The Roman Catholics converted from Pattanavar community.
- (3) The Protestants converted from the Adi-dravida community.
- (4) Other Protestants who are petty officials, teachers, clerks, etc.

The Europeans who are mostly protestants are officers in Government, Railway or Madura Co., service. They take very little interest in Church matters. For their benefit, an English service is held once a month in St. Peter's Church which is attended by a few of them.



St. Peter's

The majority of the Christians are Roman Catholics and belong to the Pattanavar community. They are very enthusiastic in religious matters, and especially the women-folk are very religious and are regular Church-goers.

The position of the Adi-dravida Christian in Kadambadi is very pitiable. As they are Adi-dravidas they are not able to move freely with the local people. The protestant clergy do not take much interest in their welfare. They do not have the Church nearby and they rarely attend a Church service. They are more Christians in name rather than in reality. For the Protestants there are three big Churches. (1) The Lutheran. (2) S. P. G., (3) The Wesleyan. Services are held in all the three Churches and attended by a handful of people. It would be a good thing if the three Churches are united and a single service is held with a big gathering. Of course such combined services are held during festival occasions like the Easter, the Good Friday and the Christmas. The few people who attend the Protestant Church services are teachers, clerks and petty officials.

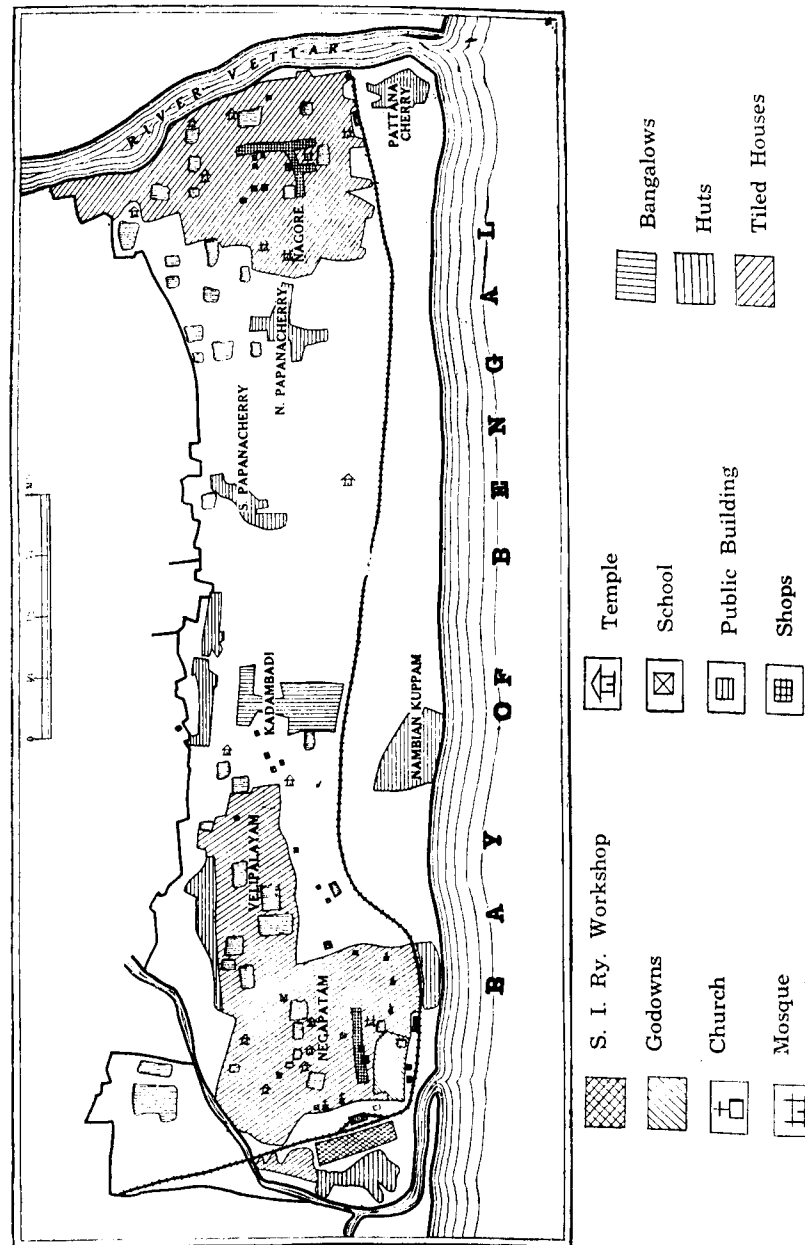
DISTRIBUTION OF HOUSE TYPES : (MAP NO. IV).

It is very interesting to correlate the house-types with the distribution of communities.

The Europeans who live in Kadambadi, live in Bungalows in large compounds with big gardens in front, with garage, kitchen and servant's quarters at the back, quite separate and at some distance from the main house. Most of them are one storeyed buildings. As the European population is diminishing from day to day in Negapatam, no new bungalows are built. The new type of houses that are found in such large numbers in Mambalam

(Madras) and other newly developing areas are conspicuous by their absence. As the town is declining in importance no new

IV Distribution of House types



houses are erected; the few that are built are of old fashioned design and lay-out.

Huts are numerous in Pattanacherry, Nambian Kuppam, North and South Papanacherry and that part of Kadambadi where the untouchables live. There is not much difference between the huts of the fishermen of Nambian Kuppam, or that of the market gardener at Papanacherry or of the untouchables at Kadambadi. The walls are built of mud and roofed by paddy straw. The flooring is of smoothed clay which, when dry, looks black in colour and smooth as cement. Every hut has a sort of pial in front of it, where people sit. The pials are not more than 2½ feet from the ground, and the flooring of the house would be just ½ a foot above the ground. Usually a hut has no rooms, and



A typical hut

no windows. Sometimes a tiny hole in the wall passes for a window. Any crude plank of wood is converted into a door. The huts are simple and dirty. The thatched roof is a veritable home for cobwebs and an excellent breeding ground for the scorpion and the centipede. During summer days scorpions and centipedes fall from the roof and the people don't much mind it.

The majority of the houses in Negapatam are neither bungalows nor huts. They are ordinary brick and tile houses of a single storey. All these houses have rooms round a central courtyard. The courtyard in the centre is very useful in bringing plenty of sunlight and fresh air into the house—the fewness of windows are made up by the open courtyard. All rain that falls on the roof is drained into the central courtyard. The houses of the rich and poor are of this type, but are different in size. The rich people have houses with three or four courtyards of this type, one behind the other in succession while the poor have to be satisfied with just one courtyard.



A typical tiled house

The different public buildings differ in construction and architecture—some are storeyed and others not. As they vary very much it is difficult to discuss in detail about them in this paper.

LAND UTILIZATION MAP NO. V

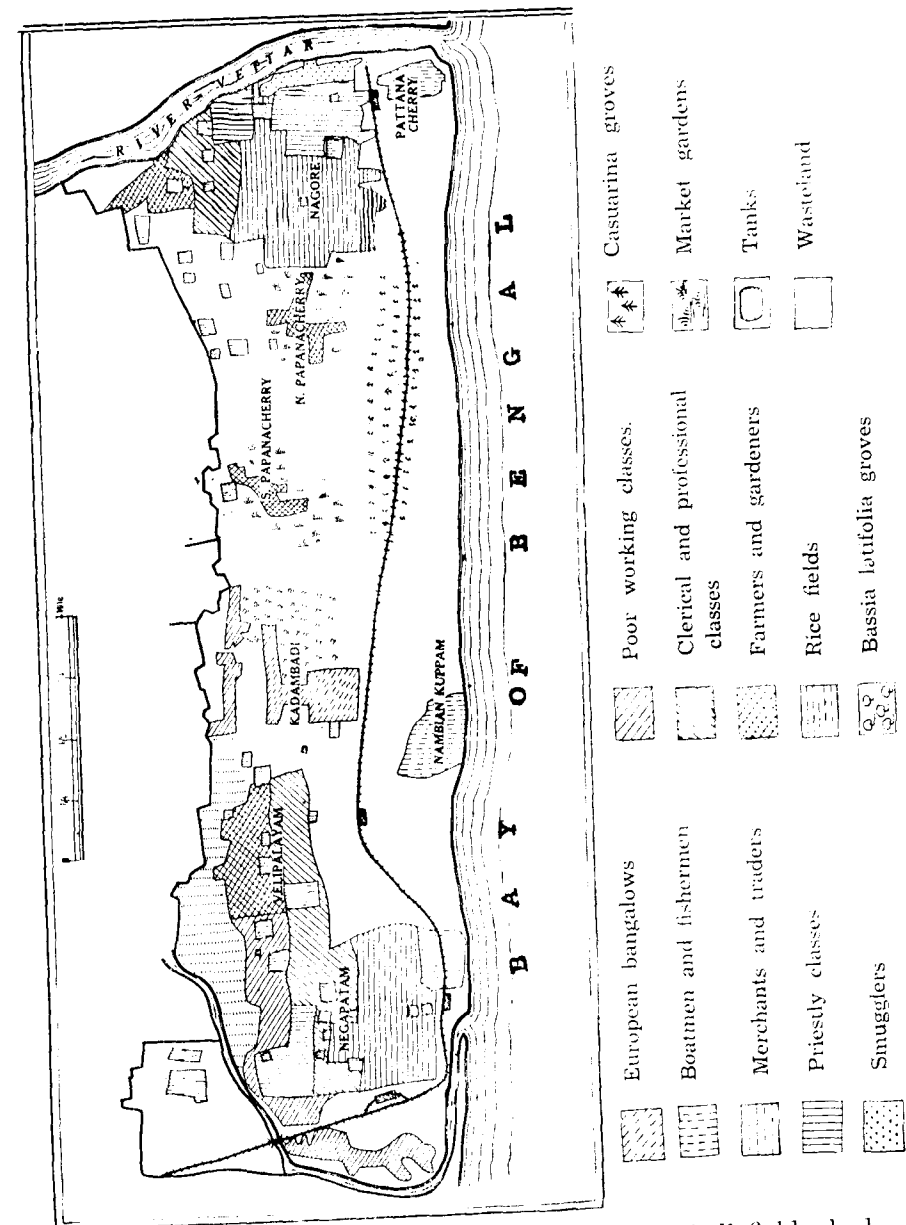
Negapatam is a twin-town, Negapatam proper in the South and Nagore in the North. The town covers an area of $5\frac{1}{2}$ sq. miles and more than 1 sq. mile along the coast is sandy waste. The few houses that are found along the coast are huts belonging to the fishermen.

Another interesting feature of the town is that a large portion of the town is covered by tanks—typical of an ancient town. In the town there are more than 40 tanks. The tanks are not much used in the present day. Most of them have no outlets and the stagnant water is a good breeding ground for mosquitoes. Negapatam is unhealthy because of the tanks and the mosquitoes. Elephantiasis is a very prevalent disease of the place. Just now the Municipality have realised the danger and an oil engine is used for baling out water from stagnant tanks.

About half the area is built up—over which stand the bungalows, houses, huts, public buildings, temples, churches and mosques. The town cannot grow to the East because of the sea, and to the South and West because of the rivers. There is a possibility of expansion to the North of Negapatam proper. In the same way there is expansion possible to the South of Nagore. The future settlements will be most probably along the Nagore-Negapatam denain road. There are plenty of sites for buildings which are not

utilized because of the declining importance of the town. Many of the sites are not used in any way. A few of them are taken up

V. Occupations and Land Utilization.



by enthusiastic youths and are converted into football fields, badminton and volleyball courts.

Land around North and South Papanacherry is used for market gardening which partially satisfies the local demand, while the remainder comes from Poyur across the river. A few plots of land along the railway line are planted with casuarina trees, which successfully fix the sand on the sea-shore and prevent it from being blown further inland. Rice fields are found to the West of the town, but they are few within the municipal limits. South of the Negapatam railway station there are many big buildings which were once the S. I. Ry. workshops. For many years they remained disused. Recently one of the buildings has been reconstructed into a cinema—"the Universal Talkies"—which is the chief attraction for the people who want some recreation. The other buildings have been taken up by the "Steel Rolling Mills", which has just begun to function (1936). The officers of the Imperial Air Ways have surveyed the place and have pitched on "Thethi Thedal" as a suitable site for an aerodrome. The future air mails to Malaya will pass through Negapatam.

COMMUNICATIONS

The municipality maintains 61 miles of roads of which 14 are metalled and the rest are mud roads. Being in the Cauvery Delta no stones of any kind are available for road metal. Till recently white coral stones were imported from Jaffna in country boats in particular seasons of the year. As this was not readily available and as it was also costly, blue metal is being bought from Trichinopoly at Rs. 6 per cubic yard. The roads are in bad condition and need urgent attention. There is regular bus traffic from

- (1) Negapatam to Nagore,
- (2) Negapatam to Tiruthuraipundi,
- (3) Negapatam to Tiruvarur,
- (4) Negapatam to Karaikal.

RIVER TRAFFIC

The Negapatam—Vedaraniyam Canal was constructed in 1863-1867 at a cost of Rs. 55,000 and subsequent improvements brought the outlay to Rs. 1,08,000 in 1874. The total length of the canal is $35\frac{1}{2}$ miles. The canal brings the salt pans of Vedaraniyam into touch with Negapatam. The canal is used much for goods and passenger traffic. The journey from Negapatam to Vedaraniyam

takes 14 hours. The total income earned by the canal is Rs. 1,000 per year.

RAILWAYS

There are six miles of Railway within the municipal limits and four railway stations—(1) Negapatam, (2) Negapatam Beach, (3) Velipalayam and (4) Nagore.

WATER-WAYS

There is a fortnightly steamer service to Malaya and many coaling and cargo steamers call here. People who go to Penang, Singapore, Batavia, etc., embark here. There are also many native craft which carry on trade with Ceylon, the Andamans and the other islands of the Indian Ocean.

Since 1935, the Negapatam Electric Supply Company Ltd., receives electrical energy from Pykara and supplies power to the town. At present the power is used mostly for domestic purposes and for street lighting. The Steel Rolling Mills consume about 500 units of power per month. As the power is sold cheap for industrial purposes, there is a possibility of greater industrial development.

THE PORT OF NEGAPATAM

Negapatam port is an open roadstead and has an export and import trade in various commodities to the extent of 200 lakhs of rupees. Both the British Indian Steam Navigation Co., and the Asiatic Companies' steamers call regularly, and a large number of country brigs and barques are owned at and sail from the shore and some 160 boats are employed to take the cargo and passengers on board. Cargo is landed and shipped at the wharf, opposite the Customs House. There are two cranes each of three tons lifting capacity. The wharf is maintained at heavy cost. The river gets silted up and constant dredging is necessary. As the wharf is built on the convex side of the river bend, erosion takes place under the stone structure, and much damage is caused to the wharf very often. The trade is mostly between Negapatam and Malaya, Ceylon, Burma and the British Indian ports. The situation of the emigration depot at Negapatam helps a great deal in passenger traffic to Malaya. In the year 1934, no less than 52,143 emigrants went to Malaya to work in the rubber plantations.

THE TRADE OF NEGAPATAM

Year	Exports	Imports
Beginning of the century (1903-1904)	Rs. 73,67,000	Rs. 44,78,000
Pre-war (average for 1908-1913)	Rs. 1,27,55,421	Rs. 79,14,048
Post-war (average for 1929-1933)	Rs. 1,83,29,761	Rs. 21,39,685

The above table shows in general the trend of the trade. Exports have been 64% more than the imports at the beginning of the century. Though there has been a general increase in the exports, the imports were increasing till the beginning of the war and since then decreased considerably. To-day the exports are of the value of 183 lakhs of rupees, while the imports amount only to Rs. 21 lakhs. So the exports are about 8½ times more than the imports.

GROUND-NUT TRADE

As the exports overbalance the imports, let us first consider the exports. The most important single item of export is groundnut. The amount exported has been steadily increasing.

EXPORT OF GROUNDNUT FROM NEGAPATAM

1903-04	2,56,489 cwt.	Rs. 18,92,280
Average for (1908-'13)	6,64,783 cwt.	Rs. 53,10,860
Average for (1928-'33)	14,83,062 cwt.	Rs. 80,29,963

The increase in demand for groundnut is mostly due to its great utility. It yields plenty of vegetable fat, and it is very useful in the preparation of soaps and butter substitutes. Hamburg and Marseilles are the two ports to which 90% of the groundnut of Negapatam is booked. Negapatam looms so large in the groundnut trade because of its position, close to the great groundnut producing area—S. Arcot and parts of Tanjore and N. Arcot districts. We can say Vriddhachalam lies in the heart of the groundnut area. The nearest port is of course Cuddalore. But somehow Negapatam has been thriving much better than Cuddalore in the groundnut trade, perhaps because of better shipping facilities. The groundnut is brought by rail to the godowns of many groundnut companies.

From there it is shipped to various European countries. Some of the most important groundnut companies are the following:—

- (1) Ralli Brothers.
- (2) Best & Co.
- (3) Volkart Bros.
- (4) Parry & Co.
- (5) Kuppuswami Iyer & Co.

The future of the groundnut trade is quite uncertain. There is always the fear of the Soya-bean or other substitutes taking its place. The increasing competition of the Soya-bean may be minimised if the South Indian farmer is educated and made to use better methods of cultivation and scientific manure and better seeds, and to work on a co-operative basis. Then the production would be made cheaper, and groundnut could be made to compete successfully with the soya-bean. Till now groundnut has been holding the field, and we hope that it would always do so.

GRAIN TRADE

Another important export of Negapatam is grain which includes rice, pulses, wheatflour, gram, etc.

EXPORT IN GRAIN

Year	Quantity	Value
1903-'04	5,48,617 cwt.	Rs. 22,56,000
Average for 1908-1913.	6,27,596 cwt.	Rs. 26,55,604
Average for 1928-1933	2,83,421 cwt.	Rs. 12,76,110

Negapatam is the natural outlet of the Cauvery delta—the garden of South India. The most important crop of the region is rice. So the chief item of export from Negapatam would be rice. In 1913 alone, Negapatam exported rice to the value of 12 lakhs of rupees. But as rice forms the staple food for the people and as the Cauvery delta has the densest population in peninsular India, only a small part of the crop enters into international trade. Most of the rice and other grains are exported to Ceylon. The decrease in the export trade of the grain is caused by the competition of Siamese rice. There is no possibility of a stimulus being given to the rice trade.

TOBACCO TRADE

Trade in tobacco is very important to Negapatam. In 1903-1904, Negapatam exported tobacco to the value of Rs. 4,75,000 which far exceeded the Madras export.

EXPORT OF TOBACCO

Year	Quantity	Value
1903-'04	16,42,621 lbs.	Rs. 4,75,000
Average for 1908-1913	27,61,801 lbs.	Rs. 7,25,858
Average for 1928-1933	32,21,421 lbs.	Rs. 12,70,746

The tobacco trade has been steadily growing and the exports are mainly to the Strait Settlements and Federated Malay States. A part of the tobacco is manufactured into beedies and the rest is sent raw. Beedy manufacture is an important cottage industry among the Muhammedan community.

COTTON TRADE

Another important export of Negapatam is cotton goods. Cotton is not manufactured here, but manufactured cotton goods from England and South Indian cities like Madura are imported and here it is printed and dyed according to the tastes of the people of Strait Settlements, Federated Malay States, Burma and Ceylon. The printing and dyeing is in the hands of the Muhammedans.

Year	Foreign imports	Exports
1903-'04	Rs. 22,21,000	Rs. 13,26,000
Average for 1908-1913	Rs. 1,09,695	Rs. 9,97,979
Average for 1928-1933	Rs. 1,64,885	Rs. 15,91,696

The above table shows that more Indian manufactured cotton is used for dyeing and printing at present rather than the more costly and better quality English cotton.

Other chief items of export are live animals, ghee, skins and hides, coconuts, onions, vegetables, chillies and spices. They are sent mostly to Malaya, Burma and Ceylon. Except groundnut, other articles of export never leave the Indian Ocean basin.

In the same way most of the import trade of Negapatam is confined to Malaya, Burma, Ceylon and the British Indian ports. Negapatam has a thriving trade in betelnut and the nuts are imported from Ceylon and Malaya.

Betel Nut	Import of Negapatam
1903-1904	Rs. 8,33,000
Average for 1908-1913	Rs. 13,03,688
Average for 1928-1933	Rs. 9,68,144

The trade in betelnut had been steadily increasing till the beginning of the war, and since then diminished a little. There is a big volume of trade in betelnut, because of the chewing habit of the South Indians. Betelnut is an indispensable necessity to every Indian home because betel and nut are offered to all visitors and it is daily used.

Gunny bags to a large extent are imported from Calcutta.

IMPORT OF GUNNY BAGS

1903-1904	Rs. 2,28,000	
Average for 1908-1913	Rs. 3,02,332	12,48,893 bags.
Average for 1928-1933	Rs. 1,70,725	

The total imports have diminished since the war. The gunny bags are very useful in packing grain and sending to other places.

Timber is an import from Burma. There are big timber merchants in Negapatam, mostly Chetties who order teakwood from Rangoon. Usually the big logs are floated from the steamers, and by wind action they are carried to the shore. There are sheds on the beach itself, where they are collected and stored and then despatched to various places in open waggons.

TIMBER IMPORT OF NEGAPATAM

1903-1904	Rs. 5,90,000
Average for 1908-1913	Rs. 10,41,081
Average for 1928-1933	Rs. 25,205

There has been a marked decrease in timber trade due to the depression that followed the war.

Coal is also imported and almost the whole of the coal consumed by the S. I. Railway is landed here.

COAL IMPORT OF NEGAPATAM

1903-1904	1,21,000
Average for 1908-1913	3,39,386

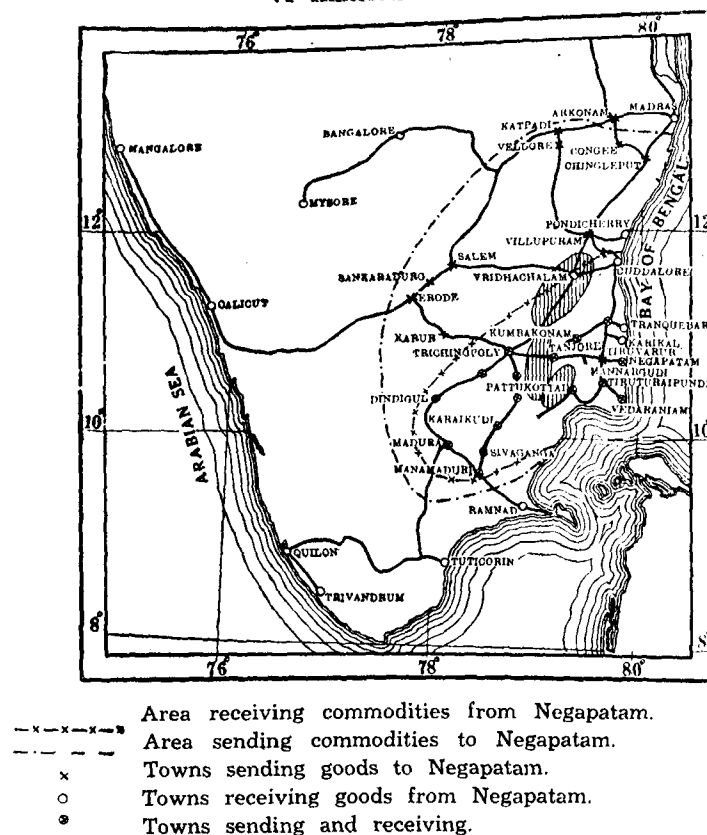
After the war it has diminished a bit and the actual figures are not available. Other articles of import are seeds of many kinds.

gums and resins, railway plant and rolling stock, sugar and patent foods.

THE HINTERLAND OF NEGAPATAM MAP NO. VI

The hinterland of Negapatam includes Tanjore, Trichinopoly, S. Arcot, N. Arcot and Madura districts. Occasionally cotton seeds are received for export from as far as Raichur, Warangal

VI Hinterland of Negapatam



and Thadapalligudam. Ellangkuruchi and Ottanchatram send the greater part of the tobacco for export to the Strait Settlements.

Negapatam also imports goods like gunny bags, gums and resins, betelnuts, cotton goods and teak and distributes them to various places in the districts of Tanjore, Trichinopoly, Madura and S. Arcot.

THE INDIGENOUS INDUSTRIES OF NEGAPATAM

Chintz Stamping:—This was formerly originated and carried on by 60 Vellalans of Negapatam, but at present it is done by Muhammedans. They chiefly use dark blue and violet colours. Previous to applying any of the stamp-blocks the cloth is dipped in the solution of gall-nut. The printed cloth is sent to Malaya and Burma.

Wax-printing:—It is also carried on in Velipalayam and Nagore. The designs are drawn by hand in wax with a sort of pen, with a ball of alce or other fibre to act as a reservoir for the wax. Pens of several thicknesses are used for various parts of the pattern.

Trade in gemstones and lapidary work:—The "Marakkayans" (Muhammedans) of Nagore procure pearls from the Gulf of Manar and rubies from Burma and get them cut and polished by Linga Baliyas in Nagore and do some trade both in India and Malaya.

Making of palm-leaf boxes:—At Nagore the Marakkayan women make pretty little boxes for betel and nut out of palmyra leaves; they are exported to the Strait Settlements. Baskets and plaited articles too are made.

Shoe making and tanning of leather:—Shoe making and tanning of leather are monopolised by the Muhammedans. The Muhammedans do not do the actual manual labour; the capital is supplied by them, and the labour is from the poorer classes.

Making of Scents:—The making of native scents is an important industry which is entirely in the hands of the Muhammedans.

Manufacture of Steel Trunks:—Negapatam has been famous for steel trunks. The trunks made here are supposed to be the best in S. India—and they are no way inferior to English trunks and they have a longstanding reputation for quality, durability and service. But they are as costly as English trunks.

Smuggling. Though not an occupation in the true sense, smuggling has been developed in Negapatam as a fine art. The Marakkayans of Nagore are famous smugglers. In spite of a very careful watch by the officers of the excise department smuggling is carried on. The main items of commodities smuggled are silver, silks, liquors, scents, watches, sugar and match boxes. As smuggling seems to be a paying concern, many have taken to it, especially

ally all the houses near the river Vettar (Nagore) are houses of smugglers. Karaikal is six miles off from the frontier. As the smugglers find it difficult to carry the goods all the way from Karaikal, the merchants of Karaikal, in order to aid the smugglers have opened branches just on the frontier. Within the last decade a town has grown in the frontier entirely of shops and nothing else. It is the famous Vanchur which is a household word in Negapatam.

The future of Negapatam. It is very difficult to predict anything about the future of Negapatam. Negapatam has declined much. Its prosperity is entirely dependant on the trade conditions prevailing in Malaya. Trade is reviving after the depression and hence we hope for better days.

There is also the newly started Indian Steel Rolling Mills; it will provide occupation for some of the population of the town.

It has been already proposed to build an aerodrome and to connect it with Singapore. So it may also become an important air port.

The Negapatam Electric Supply Co., gets cheap power from Pykara and sells it cheaply especially to bulk consumers. So there is a possibility of starting new industries.

NOTE :—Map I is based on the Survey of India One-Inch maps.

The other five maps are based on personal investigation.

The map of the Hinterland of Negapatam is based on lists of places obtained from the Railway authorities.

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Malta

By

MR. V. N. S. RAO.

Who is there that does not relish calling at a port after days of continuous sailing? Water, there had been bluish-green water everywhere. Waves had been dancing about all around. No trees had been visible. No rattling of carriage-wheels, no rap-a-tap of horses' hoofs, no sounds of motor horns had been heard—nothing had existed but the sea, the roaring sea. Now, at last, a port has come into view. There awaits something novel to be seen, watched and heard. Land, firm solid land, is in front, the very sight of which knocks out one's sea-sickness.

We have come to Malta, the little island in the heart of the Mediterranean. Away from the mainland, she exists bereft of company. Her dim coast line draws nearer. The distant haze melts



away. Clearer vision strikes the eye. The harbour is not far off. On the left is a jutting piece of land—jutting far into the sea—and, on it are two tall wireless posts. We pass them by. The town comes in sight, a town that is the most fortified in the world. Buildings abound—all on the top of the rugged rocks. No wonder there is an electric lift to carry persons up to the town.

The purple light of the summer eve is playing on the sky. The place looks a fairyland. There, a hundred yards away, on a flat

rock are assembled the Maltese—the natives of Malta. How nicely are they clad! How artistic are their tastes! They wave to us, and we wave back. How many a ship would have passed that way like the one that is passing now? How many a ship will pass that way again in times to come? Other groups of Maltese might assemble on that same flat rock to watch and wave to the gliding ship. Thus will it go on, the same scene getting repeated for years to come but with actors changing every time. But, the rocks, the stones, the waters—these will remain as they are, the silent spectators of the march of Time.



Warships! One here, one there, four at that corner, six at this end. What else can one expect of a naval base? They are quiet and calm. Will they be so if something is amiss somewhere? We are running alongside one of them. Cannons show their polished mouths—formidable objects even to insensate observers. The deck is packed to the full with men in military uniform. What dreamy eyes most of them have! To Wales, Scotland, Ireland and England most of them probably belong. Men! born to vegetate in lethargic idleness in the nameless waters of the immeasurable sea. Are they not casting longing looks at our ship, which has just arrived from their home, their sweet home? Does not that delicate man down in that corner look pale? Is he homesick? No wonder if he pines away at the thought of home!

Hark! What is that noise? Who is bawling out at the top of his voice "Laddhy, Laddhy. Have ah loo—ok. Veery sheep. O'ly tree shilli's." The words float to us from the depths at the sides of our ship. There down below is a small boat constantly being tossed about like a child's paper boat on the ruffled waters of a tub.

Standing in the midst of his well spread-out wares is a man with a voice mightier than those of Members of Parliament. How cease-



lessly does his tongue function! Out comes a coil of string from his pocket; up he throws it to us. What a hefty throw! Someone picks it up on board the ship, and lowers one end to him. A basket is tied to it. Ker-chiefs and scarfs, ties and table-cloths, strings and straw-hats, boxes and bags—all come up and go down in quick succession. A lady takes a fancy to a bag, puts a ten shilling note in the basket and sends it down. The man below acknowledges the amount with "Tanks." So it proceeds, a scene worthy to be painted.

It is getting time for us to depart. Death-like silence has taken possession of the place. The ship gives out her usual blast, a dull elongated one. The buildings begin to move away. Off we go again into the open sea. Malta recedes, becomes dim and hazy, and finally goes out of sight. Malta, lovely Malta, becomes a dream.

Geography and Education

NOTES ON AN EXCURSION TO PALLAVARAM HILL

By

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(Prepared for the Summer School of Geography, April 1936.)

Geography is "essentially a study of real objects and their relationships", but topographical maps are used because they provide, by carefully selected symbols, a detailed picture of the country depicted by them. It is important to realise how fully and accurately topographical maps achieve this end, and the opportunity to see a wide stretch of country from an elevated standpoint helps, at the same time, to compare the map with what is actually seen. The views in different directions obtained from the top of Pallavaram hill, which is almost 500 feet high, show various features and patterns or arrangements of detail which are in many ways characteristic of and common in the Tamil region.

The location of the country only a few miles from the coast should be noted, and also that it is quite near the city of Madras. The flatness of the region is varied only towards the south and southwest by numerous scattered groups of small hills, few of them higher than Pallavaram hill itself. These hills lie in a line parallel to the coast, and are composed of intrusive charnockite rocks which have been weathered more slowly. They probably formed a dyke or a series of dykes and stood out as a more or less continuous ridge before being reduced by prolonged weathering and erosion to their present state. The spheroidal weathering characteristic of these rocks can be seen very clearly in many places on the way to the hill-top, particularly in the gullies cut by stream. The region is not, however, quite level. It consists of very shallow and wide valleys merging imperceptibly into one another across very low divides distinguished by their uncultivated, barren or jungle-covered nature. Most of the land over 100 feet above sea-level is jungle, and nearer the coast the land acquires a similar character, as in the case of Guindy Park, even when it rises above 50 feet. A general but gradual rise towards the west is noticeable, more especially towards the south-west. The coast is re-

markable for the two sand-dune ridges along and parallel to it, and the two longitudinal depressions behind them, the outer occupied by salt-pans and lagoons and the Buckingham Canal, and the inner by a wider belt of almost barren, uncultivated land.



Spheroidal weathering

This coastal lowland is cultivated everywhere, except, as indicated already, in the higher areas and along the sandy coastal belts, where the soil is too dry, stony or infertile for cultivation. Such areas are consequently covered in places by low, sparse, scrub vegetation. Extensive plantations of casuarina trees have been made elsewhere, especially on the dune-ridges, and they are quite valuable as sources of supply of firewood and of materials for scaffolding, etc., especially to the city of Madras. Cultivation is carried on largely under irrigation from tanks, which are numerous and widely scattered. The kinds of crops grown under irrigation depend to some extent on the amount of water available; where the fields are favourably situated near and immediately below the larger tanks, more valuable or profitable crops are produced, such as betel, of which a large area, well over 800 acres in extent, is found under the Chembarambakkam tank, the largest in this region and also in the whole of Chingleput district.

The people are distributed over this region according to their occupations. In the first place, we have a line of fishing hamlets or 'kuppams' along the coast almost totally unconnected with the interior. A similar string of slightly larger villages are found on the other sand ridge also, and these have better and more frequent

communication inland. The agricultural population is housed near their fields and tanks, in the numerous inland villages whose size and importance are quite frequently determined by the size of the tanks on which they depend, e.g., Mangadu, Manimangalam and Tirunageswaram.

The scattered hills of this region provide good viewpoints from which a watch could be kept over the surrounding lowland, and Pallavaram hill itself was utilised for such a purpose in the turbulent days of the past. It is said that Shivaji planted one of his outposts on the top of this hill, and that the building erected in his time is the one now used as a mosque. St. Thomas's Mount, Little Mount and San Thome, with their old churches and other relics of the Portuguese and earlier Europeans who had established themselves along this part of the coast, preserve and recall their past. On the other hand, the Pallava rock-cut cave, and perhaps also the name Pallavaram (= Pallava + varam, or Pallava + puram), go back to much earlier times when the Pallava kings ruled over all this area.

The railway and modern conditions have brought new features in their wake. Many places along the railway, such as Saidapet, St. Thomas's Mount and Pallavaram, are developing into suburbs of Madras, where part of the city's day-time or working population reside, and go to the city daily for their work. Pallavaram hill is also the source of supply of road-metal and stones for building purpose for Madras and roundabout. The large quarries in the hill-sides and the use of mechanical equipment show very clearly how such sources of supply acquire exceptional value and importance when they are scarce but easily accessible, as in this predominantly alluvial coastal plain.

REPORT ON THE RESULTS OF THE QUESTIONNAIRE

Re : The Teaching of Geography in the Secondary Schools of the Presidency

SECTION I : INTRODUCTORY

It was resolved at a meeting of the Standing Committee of the Association held on 27th July, 1935, that the Committee should formulate constructive proposals for the improvement of the teaching of Geography in the Secondary Schools of the Presidency, with particular reference to the requirements as regards staff, equipment

and excursions. A preliminary investigation into the existing conditions was considered desirable, and it was decided that this should be made by means of a Questionnaire, to be issued to all the Secondary Schools. The precise form of the Questionnaire was settled at the next meeting on 27th October, 1935. The Questionnaire was distributed to the Schools in March 1936, after the permission of the Director of Public Instruction was obtained for this measure.

The total number of Secondary Schools in the Presidency is over 400 and all of them were addressed. Replies to the Questionnaire have been received from 101 schools, which represents about 25 per cent. of the total. The replies are fairly complete, and only some of the details regarding teachers' qualifications and equipment have been omitted in a few cases. More than half of the replies were received before the end of March, and almost all the others, in April. The last reply came on 25th May, 1936.

SECTION II : ORGANIZATION OF THE WORK IN THE SCHOOLS

All the schools have to teach the subject up to the VIth Form, ever since it was included in the A Group subjects of the S.S.L.C. Examination, according to the revised S.S.L.C. Scheme of 1929. Geography was also one of the C. Group subjects of the same scheme, but only 16 schools in the whole Presidency provide for C. Group teaching, and only 57 pupils have presented themselves in the subject, according to the S.S.L.C. Examination of 1936. Among the 101 schools which have responded to the Questionnaire, only 8 have C. Group Geography and between them they have a total number of 86 pupils.

The number of classes in each school varies much, from a maximum of 28 to a minimum of 3, and the average number for each of the 101 schools is 9.3. A large number of the schools tend to have one section in each of the Forms I to VI, while there is another likewise large group in which there are 2 sections to each Form. The subject is generally taught for two periods every week in all the classes, but in some schools it gets 3 periods a week in certain Forms, with only one period a week in the others. The C. Group students have extra work for 5 more periods in the week during the Vth and VIth Forms.

SECTION III : THE TEACHING STAFF

There are 381 teachers handling Geography in the 101 schools. This gives an average of nearly 4 to every school, but the actual

326 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

numbers range from 1 to 15. The amount of Geography work done by each teacher also varies widely; there is one extreme school with a single teacher, doing all the work of the 6 Forms, each having 2 hours weekly, whereas at the other extreme there are schools with 6 classes and an aggregate number of 15 periods a week, divided between 7 teachers. Several schools appear to divide the work of the 6 Forms into lower and higher stages. In some other schools, however, Geography is a part of the work of the class teacher in every Form, which is an arrangement having the obvious disadvantage of discontinuity and lack of co-ordination. It is not quite clear, in the case of the remaining schools, whether they follow any particular scheme of work.

A variety of qualifications is displayed among the 381 teachers. One of them is an M.A. in Geography of Oxford, and another the holder of the Diploma in Geography of the London University, which is equivalent to its Honours Degree, and a third has not yet completed the same Diploma. Only 7 teachers can be described as having studied the subject itself at the collegiate stage, including the three mentioned above; the other 4 hold the Diploma in Geography of the University of Madras. A hundred teachers distributed between 74 schools, have studied the methods of teaching Geography during their course of training for teaching, and many of these are acquainted with the subject only in its traditional status as the step-brother of History, in the L.T. Course. There are 30 teachers in 22 schools, who have attended the Summer Schools of Geography and Refresher Courses. Many of these are also L.T.'s. Experience in teaching the subject is the sole qualification of a large number. 157 teachers out of the 381 have over 3 years' experience. Many of these also have either the L.T. or the Summer School Certificate. The dearth of qualified teachers is scarcely made up by the number of experienced teachers, and the excessive proportion of inexperienced teachers of Geography is a serious situation with regard to a subject in which experience is most frequently the sole qualification for teaching it. Even if it is assumed that there are a 100 teachers with special training and another 157 with experience, the total number of teachers with any sort of recognizable qualifications is only 264. There is still almost a third without any qualifications whatever. It is hardly necessary to point out that the summer Schools and Refresher Courses are at best merely palliatives, and can never be by themselves adequate training for teaching High School classes. It is not only interesting but significant, in the present state of affairs, that 20 teachers should mention "other qualifications." They are

a mixed lot; one states that he is a member of the Madras Geographical Association; another that his work has won special mention in the school inspection report; others state that they have travelled widely; a few are specialists and authors of text-books; but the largest number of all (7) are those who have what they severally describe as interest in, or aptitude, love or taste either for the subject or for teaching it.

SECTION IV: EQUIPMENT

Only 15 schools have separate Geography rooms, and one of them boasts of 2 Geography rooms! A careful comparison with the information given regarding details of equipment and of Geography work of the several schools suggests that many have not fully realised that a Geography room is, in its several aspects, a museum, a laboratory, a workshop and a class-room, all combined into one.

IN REGARD TO THE TOTAL COST OF EQUIPMENT
(INCLUDING MAPS, BOOKS, APPARATUS) PROVIDED DURING THE LAST 10 YEARS

Fifteen schools furnish no information regarding their Geographical equipment. The other 86 have together spent amounts for this purpose during the last 10 years, ranging from Rs. 1,000 to Rs. 50.

Fifteen of the 86 schools give only total figures for all equipment, without showing the details separately.

Out of the 86 schools that give any information, 46 schools have spent in a period of 10 years less than Rs. 300, which may be considered the minimum, as estimated by the Standing Committee of the Association.

One school has no maps at all, though it has two Geography-trained L.T.'s and two Summer School Certificate holders. The other 71 schools have spent amounts, varying from Rs. 7-8-0 to Rs. 500, and averaging Rs. 186-3-3 nearly. *As regards books:* Six schools give no information regarding their books only. The others have spent amounts, ranging from Rs. 10 to Rs. 500, and averaging Rs. 104-1-9 nearly. 39 schools give no details about their *Geographical Apparatus*, but the 32 others have spent amounts, ranging from Rs. 6 to Rs. 300. There are 31 schools giving details about other aids for geographical teaching.

328 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

SECTION V : EXCURSIONS

Out of the 101 schools supplying information, 42 do not appear to have arranged any excursions, but among the others, excursions have been of varying frequency as is shown by the fact that while one school had organized 14 excursions annually with an average attendance of over 50, another had only one excursion in the last three years. The number of pupils participating also varies between 20 to 25 as minima and 100 to 120 as maxima. While one school has taken 400 boys on excursion during the 3 years, on 3 occasions, another has had 41 excursions during the same period with an average attendance of over 50. The exact duration of the excursions is not always clear from the answers given. A few schools have organized long tours during the Michaelmas and Christmas holidays, while in other cases the school compound seems to have been quite adequate. Local excursions are the most common type; and also attract the largest numbers. Longer excursions and vacation tours appear to be very exceptional, and restricted to a few schools, some of them doing C. Group Geography. The places visited and things seen vary widely, from such definite and limited objectives as a Swadeshi Exhibition, a light-house "to see its internal arrangements" and "an aeroplane as a means of communication and as a triumph of man's conquest of the air," to others nebulously described as a "study of land forms and water forms!"

Resolutions of the Standing Committee of the Association
on the Results of the Questionnaire

I. REGARDING QUALIFICATIONS OF TEACHERS

The Standing Committee considers that the minimum qualification for a teacher of Geography in the High School is an L.T. Degree with either a Diploma in Geography, or Geography in the Intermediate, or in the B.A., and recommends that the Director of Public Instruction be requested (1) to officially recognize this qualification and (2) to give a lead in this matter by ensuring that there will be as early as possible at least one such qualified person in each Government High School.

N.B.—During the interim period, until teachers with the above qualifications are available, the Standing Committee submits that every teacher of Geography in the High School should have taken at least an L.T. or B.Ed. with Geography as his special subject.

II. REGARDING EQUIPMENT

The Standing Committee deprecates the fact that in a majority of schools the amounts spent on equipment within the last 10 years are less than what may be considered the essential expenditure for a High School; and since it is well known that expenditure is not often wisely made, it recommends to the Director of Public Instruction to issue directions regarding the minimum essential equipment for Geography.

III. REGARDING EXCURSIONS

The Standing Committee resolved, in view of the recent appointment of an *ad hoc* committee for organizing excursions, to await its report before considering this matter.

IV. THE C. GROUP GEOGRAPHY

The Standing Committee deplores the fact that only 16 out of a total number of 400 High Schools in the Presidency have provided for the teaching of C. Group Geography. This is no doubt due to the fact that no facilities for continuing the study of the subject in the College classes have been available anywhere in the entire Presidency except in the Queen Mary's College for Women. Even there the subject is taught only in the Intermediate classes. The Standing Committee considers that this state of affairs could be improved if more Colleges would start Geography in the Intermediate and also in the B.A. Course.

SUGGESTIONS FOR A SCHEME OF WORK IN GEOGRAPHY

For Standards I to V of Elementary Schools

(Prepared by the Standing Committee of the Association.)

AIM

To give the children an idea of the world they live in and of their own country in particular, including a more detailed knowledge of their home region.

METHOD

Story telling for Regional Geography of the World and Local Observational Study:

FIRST TWO YEARS, (Local Observational Study only, and no World Regional Geography).

330 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

LOCAL OBSERVATIONAL STUDY FOR STANDARDS 1 AND 2

(1) *Observations of the Weather, Position of the Sun.* Sunny and cloudy days; sunny side of the school at certain hours; wind, strong or gentle from their effect; rain, light showers or heavy; moonlight nights and dark nights; hot days and cold days.

(2) *Observations of Local Conditions.* Observations of the ground before and after a shower; conditions of local tank and river at different times. Crops, carts as they go by the road and what is in them, and which way they go; and whether full or empty. Lorries; buses and where they go; and whether full or empty. Railway Station (Goods Yard). Local bazaar. Local occupations and industries such as weaving, etc., and products. Where things are brought from.

N.B.—These observations are not to be made systematically; but ten minutes a day should be set apart for general conversational work with the children on what they have seen as they come to school; and they should be recorded on some simple kinds of charts.

STANDARDS 3, 4 AND 5

A. WORLD GEOGRAPHY.—REGIONAL STUDIES.

Stage 1 (Standards 3 and 4)—Globe to be used.

(a) Children of far off lands.

(b) People of far off lands.

or

(a) Stories of simpler Regions.

(b) Stories of more complicated regions.

(c) Stories of discoveries. (Winds and currents).

Stage 2. (Standard 5). Regions of the Home Land (India). (Map to be used.)

In the 5th year, during the study of India the Home Region will naturally be included. This can be studied more fully than the rest of India; and the children's own locality will be studied as a sub-region in greater detail. This sub-region should include the town or village where the children live, and the taluk and district headquarters for administrative purposes; but the main emphasis should be on the study of the region with which the

locality is geographically concerned. This region may be just outside the taluk or district boundry: e.g. Bhavani region may include Kumarapalayam, etc., on the other side of the Cauvery in Salem District, though Bhavani itself lies in Coimbatore District.

B. LOCAL OBSERVATIONAL STUDY:

1. Same observations as in the first two years in a more systematic way, with more accurate and regular recording.

For example: Weather Observations:

Standard 3.

Wind: Weather vane.

Sun's Shadow: Length and direction of it.

Standard 4.

Rain: An improvised rain-gauge. (Making of wind vane).

Standard 5.

Temperature: Using an ordinary thermometer. (Making of wind vane and rain gauge.)

Similarly Land Forms and Human Work observed and recorded.

2. Plan and Map.

Standard 3.

Very rough sketch plan of class room, of children going to the desk, etc., sketch of path from home to school.

Standard 4.

Continue the above, bringing in greater area. Need for scale: rough scale.

Standard 5.

Scale systematically explained.

N.B.—This is only one suggested scheme, which may be suitable for rural areas. A scheme for big towns like Madras or Madura may have the approach for World Geography from commodities of daily use and proceed therefrom to the world areas of their production. Such a scheme will be worked out in another sitting of the Committee.

MODEL QUESTION PAPER

By

MISS H. T. SCUDDER, M.A.,

Form VI. GEOGRAPHY (Group A) Time : 1 hour.

(N.B.—All questions to be answered.) marks.

1. Write down on your answer paper the numbers 1—20 and opposite each number the name of the rivers, cities, lakes, peninsulas, seas, etc., shown on the accompanying map. (Map omitted). 10
2. On the accompanying map show the following :—Tropic of Cancer, Longitude 0° , a route from London to Yokohama, the air route from Madras to Berlin, the winter monsoon winds. (Note : the routes should show the most important steps.) 5
3. Write down the names of 4 countries or regions in the first list, and opposite to each, write one product from the second list which is most characteristic of the region.

1. Ruhr.	1. Rice.
2. Red Basin of the Yangtse.	2. Cotton goods.
3. Caucasus.	3. Tin.
4. Holland.	4. Coffee.
5. Lancashire.	5. Silk.
6. Plain of Lombardy.	6. Oil.
7. Yemen.	7. Cheese.
8. Malaya.	8. Coal.

4
4. From the towns given below select the best example of (1) a sea-port, (2) a route centre, (3) an industrial town, (4) central town, (5) a river port, (6) a coal-field town. Charleroi, Baghdad, Milan, Rome, Shanghai, Penang, Osaka, Vienna, Madrid, Paris, Cardiff. 3
5. Some of the following statements are true and some are false. Read them carefully. If they are *completely* true, write down true. If they are *completely*, or *partly* false, write down false. Do not copy the statements.
 1. Czecho-Slovakia has developed many manufactures such as glass, chemicals and sugar.

2. Danzig is an international port under the League of Nations, located on the North Sea.
 3. Iron of very good quality is found in Spain and Sweden.
 4. The river valleys of France are great wine-making districts.
 5. It is colder in the west of England than the east in winter, and colder in the north than in the south in summer.
 6. Athens gets rain in summer, Moscow gets rain in summer, Canton gets rain in summer.
 7. Japan has developed her industries, because of her supply of coal and iron, and now is a large exporter of manufactured goods.
 8. There is more rice produced in the plains of Siam than is needed, so a great deal is exported.
 9. Malacca, Gibraltar, North Borneo, Malta are all British possessions.
 10. Maize grows in Hungary and Rumania.
 11. The natural regions of Russia are Tundra. Coniferous forest, steppe, desert, mountainous border.
 12. Port Arthur is a Japanese possession in Korea.
 13. Silk is the largest export and cotton goods the largest import of China.
 14. The Pyrenees, the Meseta, the Alps, Balkan Mountains, Apennines are the youngfold mountains of Europe.
 15. Wheat grows in Manchuria, the Steppes of Russia, South-East England and the Po Plain and a few other places in Eurasia.
 16. The silk worms are grown north of latitude 50° in Eurasia. 8
6. In what parts of Eurasia would you expect the following towns to be situated ?

334 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

Town A—has summer rain over 60"—summer temperature over 70°—winter rain over 10"—winter temperature over 60°.

Town B—has summer rain less than 10"—summer temperature over 70°—winter rain more than 10"—winter temperature over 60°.

Town C—has summer rain more than 10"—summer temperature below 60°—winter rain more than 30"—winter temperature below 32°. 3

7. Give one word to describe each of the following, and draw a diagram to explain it.

(1) A bend in an old river, with the outer bank being worn away and the inner bank built up.

(2) A valley formed by folding.

(3) Winds in the Southern Hemisphere in latitude 45°. 4

8. Fill in the blanks :—

Birmingham is famous for its———manufactures.

A pass across the Alps from Switzerland to Italy is the———Pass.

U.S.S.R. means———.

The mountains of Persia are the———mountains.

The great wheat port on the Black Sea is———.

The narrowest natural division between Europe and Africa is called the Strait of———. 3

ANSWERS

- | | | |
|--------------------|------------------|-------------|
| 1. 1. R. Ob. | 11. Leningrad. | Marks. |
| 2. L. Baikal. | 12. Baltic Sea. | |
| 3. Vladivostock. | 13. Danube. | ½ mark for |
| 4. Peiping. | 14. Buda-pest. | each. |
| 5. Hwang Ho. | 15. Rhone. | |
| 6. Shantung Penin. | 16. Marseilles. | |
| 7. Hong-Kong. | 17. Hamburg. | |
| 8. Batavia. | 18. Liverpool. | |
| 9. Dead Sea. | 19. White Sea. | |
| 10. Aden. | 20. Caspian Sea. | |
| 2. On map. | | 1 for each. |
| 3. Ruhr | —coal. | |
| Red Basin. | —silk | |

Caucasus	—oil
Holland.	—Cheese ½ for each.
Lancashire	—Cotton goods.
Pl. of Lombardy	—rice
Yemen	—coffee
Malaya	—tin

Seaport	—Shanghai
Route centre	—Milan
Industrial	—Osaka
Central	—Paris ½ for each.
River Port	—Vienna
Coal-field	—Cardiff.
5. (1) true	(9) true
(2) false	(10) true
(3) true	(11) false
(4) true	(12) false ½ for each right,
(5) false	(13) true minus ½ for each
(6) false	(14) false wrong.
(7) false	(15) true
(8) true	(16) true

6. A. India, S. China, or Siam.
B. Mediterranean regions.
C. Scandinavia 1 for each.

7. (1) Meander (1/3 for each name,
(2) Syncline. 1 for diagram.)
(3) N. West Anti-trade winds or North-Westerlies.

8. (1) Steel.
(2) Brenner or Simplon, St. Gothard, Mt. Cenis.
(3) Union of Socialist Soviet Republics.
(4) Zagros. ½ for each.
(5) Odessa.
(6) Gibraltar.

Extracts from Periodicals

THE INDUSTRIES OF MYSORE

Everything from Gold to Porcelain

By

MR. ADI K. SETT, F.R.G.S., F.R.S.A.,

When one speaks of Mysore one is inevitably led to think of its gold, chrome and manganese mines, its magnificent forests of teak and sandal, its coffee and mulberry plantations and above all its Soap, Sandal, Silk and Sugar—the four big S's with which the name of Mysore has become associated.

Mysore was the first in India to foresee the possibilities of developing its natural resources by the application of modern science and in more industries than one it is leading the way. The progressive administration of the State has happily always encouraged the investing of capital in industrial enterprises.

SOAP

The Soap Factory, which is located in Bangalore City proves to be a star feature in a tourist's programme. It is one of the few State enterprises which has proved profitable from its very inception. Last year a profit of about Rs. 90,000 was made. The products, which consist of toilet and washing soaps, brilliantine, vanishing cream, tooth paste, mouth wash and gum, are thrown open to All-India markets and also exported to foreign countries but mostly to England, due to the Trade Commissioner's efforts. The Factory employs 150 labourers.

SILK

Due to the very favourable conditions obtaining in the State for the cultivation of mulberry, the sericulture industry has been highly developed and about half the total raw silk produced in India comes from Mysore. Owing to the competition from cheap Japanese and Italian silks, the sericulture industry of this State has suffered much and has caused alarm as about one-sixth of Mysore's population depends on this industry. Mysore silks are famous in India and elsewhere for their durability. The Silk Factory produces shirtings, suitings, saris, socks, neckties and handkerchiefs (which are a speci-

ality). This is a lucrative concern and affords bread to over two hundred souls. The breeding and the rearing of the silk cocoons has become a cottage industry throughout the State. Each cocoon yields a silk filament of 300 to 400 yards.

Small industries, such as cotton, silk and wool weaving, have always existed in the State. Mysore has devoted much attention to the weaving industry which provides employment to over 150,000 people. The Government Weaving Factory, started twenty-four years ago, proved to be very valuable and is now converted into an institution for training youths in weaving cotton and silk. We must remember one great factor in favour of the industrial enterprises of Mysore: electricity is cheap throughout the State and almost all the factories are electrically worked.

SANDAL OIL

Near the Silk Factory stands another factory, the products of which have made the name of Mysore famous all the world over. It is the Government Sandal Oil Factory.

Sandalwood trees are found in all parts of Mysore and wherever they may grow they belong to the State. Huge blocks of sandalwood are collected in the factory and it is interesting to see how they are chipped off within a few minutes by means of the electrically-run machines. Oil is extracted from the wood by steam distillation. Vapours carrying oil and steam are condensed in tubular condensers. Crude oil, which is extracted, is refined in the laboratory and stored in a cool room. The oil is much used for perfumes and medicines and is mostly exported to Russia for medicinal purposes. The perfume is locally sold. Mysore sandal oil accounts for about three-fourths of the world's output of this commodity. The factory, which was started by Government as far back as 1916, has moved from strength to strength and now carries on a flourishing trade with Europe, America and Japan.

SUGAR

The Sugar Factory of Mysore is perhaps the largest in India, employing over three hundred and fifty people. It is piloted by a Dutch expert. Government own 60 per cent. of the shares which have now more than doubled. The factory works for only seven months in the year. The initial capacity of the plant was 600 tons per day and though the factory is only three years old, its capacity has been increased to 1,400 tons a day.

338 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

The molasses, which are obtained during the manufacture of sugar, are used for coating the road surface in the mofussil in place of the more costly tar—this is a new venture. Roads which are thus “molassed” are much better for heavy traffic than tarred roads; this process is much cheaper than the usual tarring. The molasses are also much used in the Distillery, which adjoins the factory and here arrack, whisky and brandy are turned out; all extremely cheap. They are however not exported much. The Krishnarajasagar Dam irrigates sugar-cane plantations to a distance of over 40 miles.

GOLD

There are four principal gold mines in the State and they are leased to Messrs. John Taylor and Sons who give a royalty of about Rs. 40 lakhs per annum. Nearly 13,000 coolies are employed. Besides gold, there are chrome mines, iron ores (at Bhadravati), manganese ores; also copper, lead, antimony and asbestos can be found in considerable quantities in the State. A great many concerns are privately-owned, yielding a good amount of royalty to the Government.

The Mysore Iron Works of Bhadravati, entirely State-aided, has been causing anxiety to Government. From its inception in 1923, except for the present year, it has not been running profitably, mainly due to the depression in the iron market. It has, however, given training to a good many and afforded employment on a large scale. Recently a steel plant has been installed and great things are expected of it. The concern provides employment for 5,000 people. A small cement factory is to be very shortly installed here as the slag obtained at Bhadravati is said to be excellent. Plans are also afoot for a paper mill which will also be erected here, due to favourable local resources.

This article would be incomplete without a mention of the stone quarries which are scattered all over the State. The local granite is excellent and is exported to Europe and America to be used as kerbstones. Recently, at the Empire Exhibition in London, Mysore kerbstones were much appreciated and lauded. This granite is excellent for building purposes; all the important public buildings in the State are entirely built of granite.

ELECTRIC GOODS

The Government Electric Factory, situated in Bangalore, is under the charge of an enthusiastic and clever Polish expert.

Switches, metal lamp-shades and floodlights are chiefly turned out as well as a most attractive collection of bakelite articles which are well received by the public. Employment is given mostly to a large number of well-educated young men.

The Porcelain Factory of Bangalore is another Government concern which is receiving much attention and support from the public and is running well financially. The raw materials constituting a porcelain ware—china clay, felspar and quartz—are locally found. It is interesting to watch china clay being washed in the levigation plant and then being mixed with felspar and quartz. Chiefly insulators are manufactured and these find a ready sale all over the country; everyone of them is subjected to a severe test before being placed on the market. Some ornamental articles are also turned out here.

MEDICINES

Opposite the Porcelain Factory is the Government Industrial Laboratory where various kinds of patent medicines, liniments and tinctures are manufactured. These are chiefly used in the State Hospitals. Latest records show that 66 different kinds of medicines were manufactured during the past year. Only those raw materials which cannot be obtained in India are imported from Europe. The total value of medicine manufactured during the last year amounted to Rs. 65,000. This is a most praiseworthy Swadeshi venture and excellently run. An interesting feature here is to watch ointments being churned in big vats and to see hundreds of tablets being turned out by a small machine.

SANDAL

Adjacent to this Laboratory are the Sandal Kothi and the Lac Factory. The Kothi stores about twenty lakhs worth of wood. The billets, which are obtained after the wood is chipped, are mostly sent to Bombay for the Parsi Fire Temples. A good amount of sandalwood is exported to the United States, and Russia and France take a very fair amount of oil for medical purposes. There is a small Lac Factory, where liquid polishes for various woods and sealing wax are manufactured.

TECHNICAL SCHOOL

The Chamarajendra Technical Institute of Mysore provides practical training to students in various arts and crafts. Over three hundred of them work here and each is paid for piece work. The

various articles and furniture which are manufactured are indeed very beautiful and can easily stand competition with similar articles made anywhere in India. Inlaid work of ivory and crinoid are a speciality. Carved ivory and sandal pieces from Mysore are receiving world-wide fame. The sandalwood carvers have practised their trade for generations. A sandalwood casket presented by the Maharajah to King Edward the Seventh was exhibited at the Wembley Exhibition and created a sensation there.

SIR MIRZA'S DREAM

Mysore is indeed passing through an industrial revolution. In spite of the existence of all these various factories and industrial concerns already noticed, various important factories are to be set up shortly in the State, of which mention may be made of a biscuit factory and one for manufacturing electric light bulbs, a factory for the making of ammonium sulphate and other sulphates (estimated to cost about Rs. 18 lakhs and to be piloted by distinguished scientists). The curing of tobacco is also given serious attention to by the Government. It is the great dream of Sir Mirza Ismail, the Dewan, to make his State industrially the greatest in India, thereby bringing about employment and prosperity to the subjects. It is entirely due to his initiative, far-sightedness and shrewd business acumen that all these important factories have flourished in the past and will do so in the future.—*The Hindu*.

BADRINATH

By

MR. K. VENKATASWAMI. NAIDU

Once we cross Haridwar, the place where the Ganges enters the plains, we find ourselves in some of the wonderful fairy lands in the world.

Perhaps no other district in the Himalayan region combines rugged grandeur with delicate beauties of nature to such an extent as Gharwal. For the traveller, the mountaineer and the sportsman, it has a charm and fascination of its own. One sees stretched out for miles and miles the unchanging snow-capped peaks of the Himalayas from Trisul in the east to Kedarnath in the west.

My journey was confined to the district of Gariwal where the chief temples of Utharakand are located. There is Jamnotri

which is the birthplace of the river Jumna, Gangothri, the birthplace of the Ganges and Kedarnath and Badrinath, the two famous sacred shrines. The ravine from which the Ganges emerges into a mighty stream is commonly known as Gangothri and the hills and mountains over which it flows are so charming and refreshing that a man finds himself transported into regions of bliss. One who has seen the course of the Ganges from its source along the 300 miles of its magnificent descent to the plains, the hundreds of tributaries dedicating their waters to the holy river cannot fail to be fascinated.

THE FIVE PRAYAGS

The places at which important rivers join the Ganges are beauty spots. Invariably, there is a beautiful temple and a nice little hamlet. Devaprayag is a place where the river Alaknanda meets Bhagirati. From Devaprayag, the river is called the Ganges. The source of the river Bhagirati is called the Gangothri. It is only by following the course of Alaknanda we reach Badrinath.

The next place is Rudraprayag where Alaknanda meets Mandakini. It is on the banks of Mandakini at a height of 14,000 feet above the sea level, the magnificent temple of Kedarnath stands. The river Alaknanda meets Pindari Ganga at Karna Prayag and Nandakini at Nanda Prayag and Vishnu Ganga at Vishnu Prayag.

At Haridwar, the Ganges emerges from the mountains to the plains in all its grandeur and magnificence. Here the people offer prayers to the river as the embodiment of the sacred goddess, Ganga. The beautiful town of Haridwar is studded with dharmasalas which look like so many palaces. There people gather in thousands every day throughout the year to offer prayers to the river.

KALI KAMLIWALA

Along the upper course of the river in Gharwal, we have got beautiful little hamlets where sages and great souls are living in renunciation and peace. A few miles above Haridwar there is a place called Hrishikesh. Viswanandaji, otherwise called Kali Kamliwala, (because of his black blanket) who saw the miseries the pilgrims were put to in those early days started a great institution which provides dharmasalas, pyoos, arrangements for feeding the pilgrims throughout the route and also for giving them medical aid.

As we get near Badrinath, we come across snowy-peaks. They look very beautiful in bright sunshine. Some mountains are bare

342 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

and covered with snow. Beautiful landscapes, snowy peaks, waterfalls and caves, abodes of the rishis of ancient times, are some of the wonders which we can see only in the Himalayas.

The journey to Badrinath Puri is, with certain precautions, absolutely safe, and it is a journey which every one ought to make during his lifetime. There are some places on the route where one has to be cautious; Government have taken sufficient precautions to see that no danger to life is caused. Usually it takes 20 to 25 days to go to Badrinath and return. We have to cover over 183 miles out of which we do 60 by bus. From Haridwar to Devaprayag there is a bus service and the distance of 60 miles can be covered in a few hours. Thence we have to go by a bridle path which is generally five to six feet wide. The route is straight except in the higher regions where there are very steep ascents. During the whole route, there are 'chutties' or halting places at every second or third mile. A chutty is a place where a number of bazaarmen erect their sheds under licence; they give shelter to the pilgrims on the understanding that the pilgrims buy their requirement from them. Invariably at every chutty we have pipes from mountain springs and it is safe to drink that water. One must avoid drinking water from the Ganges or its tributaries because the water is very impure.

CHANGES IN CLIMATE

Travelling in the Himalayan region, one will often find himself as high as 15,000 feet and as low as 1,500 ft. He must therefore make necessary arrangements for changes of climate. Suddenly a heavy downpour of rain may come. There must be warm clothing. Vegetables are difficult to get, but at some important towns, we get vegetables, biscuits, nuts and other requirements. There are also dispensaries and hospitals at every 10th mile. The pilgrims are seen on the route all hours in the day and sometimes in the night also. There is absolutely no fear of wild animals, or dacoits.

There are various methods of conveyance, one of which is the 'Dandi,' which is carried by four people. We have the "Japan," which is just like the "Dohli" at Tirupathi; horses and mules. "Kandi" is another, just like a basket carried by one man on his back. But conveyance is not quite indispensable. Usually one can walk 20 miles in that salubrious climate without any difficulty whatsoever. If necessary, one can employ a Bhoj or a cooly to take our luggage for a small remuneration.

Most of the people who travel in this route are all pilgrims. We see people, from all parts of India. They become friends easily and spend time in religious discussions and render mutual help. I have met several "sadhus." Some of them are bare and naked, without even a shred of cloth on their body sitting in the open exposing their bodies to the biting chill and snow. As pilgrims meet each other, the cry, "Jai Badri Bishal," rends the air.

BADRINATH PURI

On a site which is 11,400 feet above sea level, stands the little village of Badrinath Puri and around it we see snowy peaks. The mighty Alaknanda is flowing by the side of this hamlet. There is a thermal spring (122 deg. F.) known as Tapat Kund which is said to contain valuable healing properties. In that water one enjoys a hot bath, amidst the cold surroundings.

The beautiful little temple enshrines the famous idol of Badrinath. The Lord is seated in the Yoga posture. It is stated that Lord Sri Vishnu, when He created the world, Himself first performed 'tapas' and then taught the great 'manthra' to the people. This sacred manthra is the source of the Vedas. This temple is considered to be the most sacred in India and every Hindu is ordained to worship Lord Badrinath at least once in his lifetime.—
The Hindu.

News and Notes

An ordinary meeting of the Association was held on 16-10-'36 at the Presidency College, when Mr. K. M. Subrahmanyam, M.A., L.T., Dip in Geo., read a paper on *the Agricultural Geography of North Arcot District*, with Mr. K. C. Ramakrishnan M.A., in the chair.

Another meeting of the Association was held in the last quarter, on 9-12-'36, at the Teachers' College, Saidapet, when Mr. B. M. Thirunarayanan, B.A. (Hons.), London, delivered a lecture on *Air Routes in India*, with Capt. Abdul Hamid, M.A., in the chair.

At its last terminal meeting held on 13-11-37, the Standing Committee of the Association prepared an outline scheme in Geography, suitable for Elementary Schools in rural areas, which is published in this issue.

Though the Excursion Committee of the Association could not complete its work in the last quarter, the Tamil Geographical Terms Committee has been carrying on its work with frequent meetings, classifying and supplementing the geographical terms, and revising the Tamil equivalents, already prepared by the Madras Presidency Tamil Sangam. It has been an arduous undertaking; and the work is nearing completion.

A meeting of the Coimbatore branch of the Association was held in November 1936 under the Presidency of Mr. T. K. Duraiswami Iyer, when Mr. T. S. Venkatesa Iyer, B.A., B.L., gave a talk on *the Hogainakal Falls*.

Another meeting of the same branch took place on 28-1-'37 under the Presidency of Mr. K. R. Ramakrishna Iyer, B.A., B.L., when Mr. Rao Saheb C. M. R. Chettiar, delivered a lecture on *My Tour in the Deccan Plateau*, illustrated by slides.

We congratulate Mr. Chettiar on his election as Fellow of the Royal Geographical Society. He has been the enthusiastic President of the Coimbatore branch of the Association, whose activities are mainly due to his earnestness and enthusiasm. He has contributed several papers on the Historical Geography of South India, especially for the Conferences of the Association; and these have been published in back numbers of the Journal.

The next Summer School of Geography has been arranged to be held at the Geography Department of the Teachers' College, Saidapet, from the 7th to 30th April 1937 for the benefit of teachers of Geography in Secondary Schools. Details regarding the course will be notified in due course.

The Working Committee of the Association has resolved at its last meeting held on 6-2-'37 that in view of several difficulties of having the Association year and consequently the Journal year different from the calendar year, the latter be adopted as the Association and the Journal year.

Nothing is yet known definitely about the reorganisation of the Secondary School-Leaving Certificate Scheme; and it is expected that the existing scheme will continue to be in force for some time longer. Meantime, the Madras Teachers' Guild has prepared a well-considered scheme, which will be made the basis of discussion at the S.I.T.U. Conference to be held at Tanjore in May next.

We are glad to note that Sarah Tucker College, Palamcottah has introduced Geography in the Intermediate Course; and this is the second Women's College in the Presidency to have Intermediate Geography.

Even in these two Colleges, the subject is only a blind alley. It is hoped that at least at the Queen Mary's College which has been having Geography taught at the Intermediate stage for a fairly long period without any break, early steps will be taken to continue it in the B.A. course.

It is, however, deplorable that no Men's College in the Presidency has made provision for teaching the subject even in the Intermediate stage. The Presidency College, as the premier Government College in the Province, should normally give a lead in the matter of introducing new subjects of importance. There is a special reason why this College should find it advantageous to do so. Students taking up Geology in the B.Sc. course will find in Intermediate Geography the necessary preliminary training which the Botany and Zoology students of the same course find in Intermediate Natural Science. It is surprising that the College Authorities have not yet realised this simple and obvious fact; and it is

346 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

hoped that early steps will be taken to start Intermediate Geography in that institution.

* * * *

In the absence of provision for teaching Geography in the B.A. Degree Course in any of the Colleges in the Presidency, the University of Madras has with considerable forethought instituted the Diploma Course in Geography, a training in which ought to be sought by all prospective teachers of the subject. The Training Colleges give preference in the matter of admission to the Geography section to persons with such qualifications, irrespective of other considerations. Yet, it is regrettable that the need for taking this Diploma before seeking admission in the Geography section of Training Colleges has not yet been generally realised.

* * * *

The proposal to permit *bona fide* teachers who have passed the Intermediate Examination and taken the Diploma in Geography to appear privately for the B.A. Degree Examination is before the University authorities; and its approval should facilitate people who are keen about it getting the Degree in Geography without waiting indefinitely for Colleges being affiliated in that subject.

* * * *

It is understood that the Osmania University is proposing to introduce Geography in the Intermediate Course, and to provide for its teaching in the City College at Hyderabad (Deccan). It is hoped that the Annamalai and the Mysore Universities also will take up the question at an early date.

* * * *

Two of the papers on Geography, submitted to the *Geology and Geography Section* of the Indian Science Congress at its 24th Session held at Hyderabad in January last, namely, *the Human Geography of the Post-tertiary Alluvial and Sandy Belt of the East Coast* by Mr. N. Subrahmanyam and *the Industrial Crops of Kerala* by Mr. George Kuriyan—are published elsewhere in this number of the Journal.

* * * *

The next session of the Science Congress to be held at Calcutta in January 1938 is its Silver Jubilee session, which will be attended by representatives of the British Association among whom are some well-known Geographers. Mr. D. N. Wadia, Assistant Director of Geological Survey, has been elected President of the Geology and Geography Section for that Session.

* * * *

It has been proposed at Hyderabad that a federation of the several Geographical Associations and Societies in India may be

thought about, whose representatives may meet annually along with the Science Congress, and discuss matters of common interest, and compare notes regarding their work, activities and achievements. The suggestion has also been made that the Madras Geographical Association as the oldest Geographical Association in India should take the lead in the matter.

* * * *

The 'All-India Federation of Teachers' Associations will hold its next session at Calcutta in the Christmas week of 1937. The meeting of the Science Congress will take place in the following week in the same place.

* * * *

For the Geography Section of the Seventh World Conference of the World Federation of Educational Associations to be held at Tokyo from 2nd to 7th August 1937, the following general theme has been decided upon:—*Promotion of International Goodwill Through Geographical Education*. The following three papers will be among those presented by the Japanese Geographers and Educationists:—

1. How to Realize International Exchange of Geographical Teaching Materials,
2. Recent Development of Geographical Education in Japan.
3. Changes in the Distribution of Population in Japan since 1870.

Additional papers from prominent geographers of other countries are of course expected.

Reviews

Map Making. By Frank Debenham. (Blackie & Son, Ltd., London) 1936. Price 5sh./- net.

It is a matter for joy that a master of the subject has chosen to write a simple book on Surveying for the amateur. Most books on the subject are meant for the professional, and leave the impression that the making of maps is a sort of mystery, involving the use of strange and expensive instruments, acquaintance with higher mathematics and a high degree of perfection with the pen. Prof. Debenham has shown in this volume under review that reasonable maps can be made with the simplest of instruments, mathematics of the middle school standard, and a moderate ability only with the drawing pen.

After explaining certain important general principles and scales in the first two chapters, surveying by means of the chain, the compass and the plane-table, and with the help of photographs and the methods of determining heights—are treated clearly in the next 8 chapters. The last chapter, which discusses the choice of instruments is followed by appendices explaining the use of lettering, conventional signs and traverse tables.

We can strongly recommend the use of this book by the upper form school boy, the first year university student, or the field scientist, who will find that the mapping of small areas is a simple, interesting and inexpensive hobby, in which a reasonable degree of accuracy can be easily attained.

Longmans' Descriptive Geography: Books I & II (Telugu) and Book III (Tamil). By L. D. Stamp. (Longmans, Green & Co., Ltd., Madras). 1936. Price As. 10, As. 12, and As. 12.

Books I and II of Mr. Stamp's middle school Geographies are the Telugu versions of the Tamil books reviewed in the previous number of the Journal. As in those books, the treatment is direct, clear and simple; and only facts of outstanding value have been presented to produce the right perspective of the regions in the several continents. The books are well illustrated with a number of good pictures and diagrams; and useful exercises are given at the end of each section. The print, paper and get-up have made the volume attractive.

Descriptive Geography: Book III (Tamil and Telugu). By N. Subrahmanyam. (P. Varadachary & Co., Madras). 1936. Price As. 12.

This third book in Tamil and Telugu completes the middle school series by the same author, reviewed in the previous number of the Journal. As in those earlier books, the instructions and principles accompanying the syllabus have been closely followed, including descriptive treatment; and the volumes have been well-illustrated by choice pictures, maps and diagrams. The suggestive exercises given at the end of each chapter not only test the knowledge of the subject-matter but also supplement it in a way. The bold print on glazed paper with a fine get-up make the volumes attractive.

The Story of Indian Civilisation. By C. E. M. Joad. (Macmillan & Co., Ltd., London). 1936. Price 2sh/6d.

In this interesting little book the author has not attempted to give any connected political History of India, not even in outline. On the other hand, he has selected those aspects of Indian History, which have appeared to him to be significant or distinctive of Indian thought and culture, and has tried to present some account of them. Avowedly, the book which does not pretend to be an original contribution is not an objective record of Indian civilisation, but is "an account of the reactions produced by that story in a highly interested spectator, a product of the very different civilisation of the West, whose primary purpose in writing has been to make clear to himself what it is that India has or has not which marks off her civilisation from that of all other peoples, and how much of this 'something,' which romantic writers call 'the spirit of India,' may be discovered and applied for the benefit of the West." The volume may be recommended for study by university under-graduates, who will find in it the salient features of their own country's culture, as presented by a sympathetic foreigner.

The Oxford Geographical Note-Book for Secondary Schools: Books I to VI. By Jasper H. Stenbridge. (Oxford University Press). 1936. Price: Book I—1sh/-, Books II to VI—10d. each.

This is a series of six geographical exercise-books, intended for individual use during a four or five-year school course. The

exercises are for the most part based on sketch-maps, which attempt to show the effect of relevant factors on particular aspects of Geography. A number of photographs of general interest are included; and exercises based on them will no doubt serve to stimulate observation. A number of questions, selected from various standard examination papers have also been included. Each book closes with an examination paper which can be answered, after the rest of the exercises have been completed.

Book I deals with the British Isles—the Home Country of the English children for whom it is intended; and Books II to VI each deal with the following continents in order: North America, South America, Africa, Australia and Asia. But they may be taken, of course, in any order. A similar volume on India, as an alternative to Book I, would help the use of the series in Indian schools.

Exercises in Modern Geography: Book I—The World; Book II—The British Isles. By A. W. Coysh and D. M. Hunt. (University Tutorial Press, London). Price 1sh. each.

These two exercise books are intended to encourage atlas study and examination of pictorial material; and may be used as basis for individual work. The exercises contained in Book I are intended for use by pupils who have completed the regional study of the continents and who need to co-ordinate and extend their knowledge of world geography before leaving school or prior to school certificate examination. Those in Book II provide a detailed survey of the Home Country (British Isles), and are intended primarily for pupils preparing for public examinations. An alternative Book II on India will prove very useful for Indian pupils.

Problem-Maps (World Series). By H. Alnwick. (George G. Harrap & Co., Ltd., London).

This book is not a course, but the presentation of a collection of 43 maps in such a form as to suggest problems and arguments. They are intended not as topographical tests, but as the subject of geographical discussions, while part of the accompanying text suggests also the converse process by asking the pupil to turn a given argument into map form and thence to make his own deductions. In an appendix are given the statistics required for working out the problems, which mainly refer to world commodities that have

been made the link between the Regional Study and the World Whole.

Bulletin of the Madras Government Museum: Volume III, Part II—An Outline of Indian Temple Architecture. By F. H. Gravely. (Superintendent, Government Press, Madras). 1936. Price As. 12.

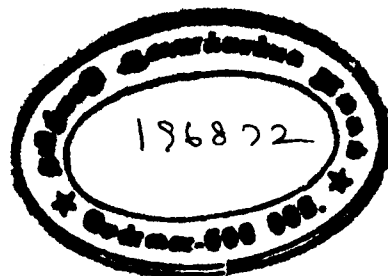
This little brochure is highly interesting and elucidatory to the student of Indian Archaeology, who will find in it a clear presentation of the type characteristics of the different styles of Indian Temple Architecture, northern and southern as well as the independent styles of restricted range such as those of Malabar, Bengal, Nepal and Kashmir. It will be still more interesting if it were possible to correlate the characteristics of the different styles with possible influences of environment or with the available structural raw materials in the several regions. As a matter of fact, in one or two places geographical influences have been shown to have been at work as at page 9: "In a West Coast or Malabar temple, the walls resemble a wooden railing in structure, and are as a rule still made of wood to-day." And this in a region where wood is plentiful and cheap is quite natural. The presence of a series of pitched roofs one above the other in Malabar and Nepalese temples has been traced to Chinese influence, the result of proximity in Nepal and of sea-contact in Malabar—the latter evidenced by the Chinese fishing nets of Cochin and Travancore backwaters.

The Calcutta Geographical Review: Volume I. Part I—September 1936.

We have much pleasure in welcoming the first number of the Calcutta Geographical Review, the organ of the Calcutta Geographical Society, Geological Department, Presidency College, Calcutta. The Society has been in existence since July 1933, doing silent spade work; and the Review has been undertaken recently, in September 1936. This first number contains several useful articles of varied interest; and with such a good start the Review is sure to prove a valuable clearing house of Geographical thought and activities in Bengal and North-eastern India. We wish the venture all success that it deserves.

Books and Journals Received

- Map Making* : By Frank Debenham.
The Story of Indian Civilisation : By C. E. M. Joad.
Longmans' Descriptive Geography : Books I & II (Telugu), and Book III (Tamil) : By L. D. Stamp.
Descriptive Geography : Book III (Tamil and Telugu) : By N. Subrahmanyam.
Geography of Madras City : By K. R. Rajam.
Problem-Maps (World Series) : By H. Alnwick.
Exercises in Modern Geography : Books I and II : By A. W. Coysh & D. M. Dent.
The Oxford Geographical Note Books : By Jasper H. Stenbridge.
Report of the Department of Agriculture, Madras for the year 1935-36.
The Geographical Magazine : November, December (Xmas Number 1936) & January 1937.
Kalaimagal : November & December 1936, and January 1937.
The Educational Review : November, & December 1936, and January 1937.
The Scottish Geographical Magazine : November 1936 and January 1937.
The Indian Educator : November & December 1936, and January 1937.
The Geographical Journal : November & December 1936, and January 1937.
The South Indian Teacher : November and December 1936.
The Quarterly Journal of the Mythic Society : July-October 1936.
Geography : December 1936.
The Indian Co-operative Review : October 1936.
Educational India : December 1936, and January 1937.
The Geographical Review : Index for 1936, and January 1937.
Indian Culture : January 1937.
An Outline of the Indian Temple Architecture : By F. H. Gravely. (Bulletin of the Madras Government Museum, Vol. III, Pt. 2).
The Indian Journal of Economics : January 1937.
The Calcutta Geographical Review : Vol. I, Part I, September 1936.



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