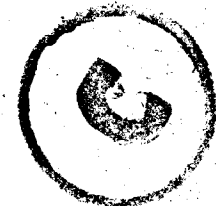


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THE
Madras Geographical Association
RULES

1. The name of the Association shall be 'The Madras Geographical Association'.

Objects.

2. The objects of the Association shall be:—

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

3. These objects shall be secured by:—

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

Membership.

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

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

6. Honorary members are those who shall be so elected by the council by the majority thereof present at its meeting. They shall be exempt from liability to pay subscription, and shall have all the privileges of ordinary members, except voting.

(Continued on Page 3 of the Wrapper.)

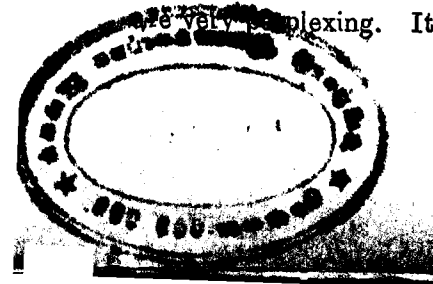
—THE JOURNAL OF—
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VOL. IV] JANUARY 1930 [No. 4

**Studies in the History of Some Common
Commodities.**

SECTION 2. Fruits.

I shall now pass on to deal with some of the fruits which are now in common use amongst us. We may first take the *plantain* a name which has given rise to much speculation but with no conclusion. The fruit is known in Sanskrit as *kadali* (apparently, observes Dr. Macleane, derived from the plant having a watery leaf), an appellation which has been adopted by only a few dialects. In the Dravidian world it is known by the puzzling names of *arati*, *valai*, etc. This multiplicity of names seems to indicate that the plant and fruit were independently known to all parts of the country. This need not surprise us as the plantain tree was indigenous to India, in fact, to all the tropics. Dr. Macleane suggests that the original habitat of the plantain was the valley of the Euphrates; but there is no sufficient evidence in favour of this. It may be noted however that it was cultivated in Palestine before the age of the Crusades. From the fact that many picturesque epithets have been applied to the fruit—for instance, *rambha*, *vanalakshmi*, *dirghapatra*, *vrsha-pushpa*, *balakapriya*, *guchchha-phala*—and from the fact that the mediaeval travellers refer to it as the fruit of paradise, the Indian fig, etc., we have reasons to believe that it satisfied the Indian palate to such an extent from the earliest times possible as to make them very poetic! The Arabs seem to have confounded the plantain tree with the Mocha (red-cotton tree), from which the botanical name *Musa* has arisen. The words *plantain* and *banana*, by which the article is known in the west, are very perplexing. It has been suggested that the *banana* was a



variety introduced into India from the West Indies in the 15th or 16th century. Nicolo Conti, Varthema and other travellers refer to the abundance of the plantain in the Gangetic region, Malabar, etc. The plantain has always figured prominently in Indian literature, marriages, medicines, and of course in the history.

The Cocoanut.

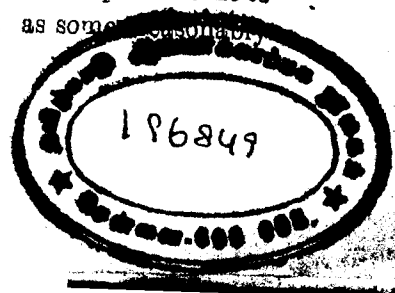
The origin of this fruit or nut has been discussed by many learned writers. Some believe it to be indigenous to India, and others would trace it to America, though all agree that it became widespread throughout the tropical regions in a very early period of history. Sir George Watt deals with this question in his characteristically lucid manner. "On the assumption that it originated in the islands of the Indian and Pacific Oceans there would be little to prevent its having been carried even by currents of the sea, or in some cases by primitive man, to the western shores of America and to the coasts of Southern China, Siam, Burma and India, in prehistoric times. This is so natural and obvious a supposition as to render most of the learned arguments indulged in by authors on this subject superfluous. The Spanish, Portuguese and Dutch travellers may have greatly aided in its distribution, more especially in conveying it to the east coast of America, to the West Indies and to Africa, but a wider natural distribution had doubtless taken place long anterior to the discovery of America. It is therefore hardly of serious consequence whether or not it may have been indigenous to tropical America as well as to certain of the islands of the Pacific. Its natural habitat is undoubtedly maritime. It is known by so many widely diversified names, in the regions of its present production, as to necessitate a vast antiquity. But as possibly indicative of a stronger claim for an Asiatic than an American origin, derivatives from its Sanskrit name *nari-kela* have accompanied the palm eastward very nearly to the shores of America and westward to Madagascar and Turkey to a far greater extent than can be shown for any other classic or ancient name that it possesses. This does not of necessity involve its being accepted as indigenous to India but simply that its extended cultivation accompanied Sanskrit influence." While the Sanskrit expression *Narikela* has prevailed in India and a large part of the world, Europeans came to call it cocoanut either from the Cocos islands, as some reasonably

suppose, or if we are to believe Barros, Garcia de Orta and Linschoten from the supposed resemblance of the fruit to the face of a *coco*, Spanish and Portuguese monkey. The term cocoanut therefore has nothing to do with the cocoanut plant. In India it has always been known as *Narikela*, the Malayala *Nargil* of Friar Jordanus. The *Periplus* mentions its export in the first century A. D. *Cosmos* calls it by its Sanskrit name in the 6th century A. D. John of Monte Corbino (13th century), Marco Polo, Nicolo Conti, San Stephano, Varthema and others call it 'Indian nut or fruit.' Baber, Abl Fazl and others naturally refer to the cultivation of the cocoanut in picturesque terms. The part which the cocoanut has played in the daily diet, marriages, and other multifarious channels has given rise to the name of the *Kalpaka-vriksha*, in India. The copra and the cocoanut oil have been long used by the people of India. It may be pointed out here that the manufacture of candles from cocoanut oil was first made by Messrs. Price and Co., for public illumination at the time of Queen Victoria's wedding. The cocoanut wood—the porcupine wood as it has been called—has been used for various purposes. The dried shell has been used for such picturesque purposes as the *Kamanjala* of the Sanyasin, the water bowl of the *hukah*, ornamental vases, snuff-boxes, scent bottles, etc. Baber and Akbar refer to the making of the body of a kind of violin with it. The small cocoanut pearl found occasionally in the cocoanut is regarded by the Chinese as an amulet.

Mango.

Mango or *Amra* (from which all the Indian languages have derived the word) has been called cupid's favourite and spring tree. Indian literature is very fond of this tree and its flowers are among the five bows of the God of Love. The Mango tree has played a large part in the superstitions, proverbs, tales, folklore, and the religious life of the people. The mango leaves are used in the ornamental festoons of marriages. The fruit is mentioned by Friar Jordanus (14th century) and subsequent travellers. Varthema calls it *amba* (i.e., *amra*). Baber describes its excellence. Garcia de Orta (1563) is eloquent about the fruit at Ormuz. The *Amraphala* is a singularly Indian fruit and certainly it does not suffer from lack of appreciation. The fruits of Mazgaon (Bombay) and Malda (Calcutta), and other particular areas have had interesting history.

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The Citrons.

Perhaps the most interesting of the fruits which belong to the tropical countries are the several varieties of the citrons—the *Narattai* and *Elumichchai* of the Tamils. Sir George Watt observes : “The different forms of the Orange, the Lemon, the Citron, the Lime and the Pomelo constitute a tropical assemblage of fruits in many respects comparable with the apple, the pear, the peach, the plum and the cherry—a temperate series—though the former are infinitely more valuable than the latter, because more widely cultivated and more extensively used. Moreover since the Orange is consumed very largely in temperate climes, cultivation in the tropics has to be made on the basis of the foreign as well as the local demands, so that oranges, lemons, etc., have become regular articles of trade all over the world. Until very recently Europe obtained its supplies of these from the warm temperate tracts of South Europe itself and from the islands of the Mediterranean and the Atlantic, adjacent to Africa. For some years the quicker transit of steam navigation has permitted supplies to be drawn from a greater distance than formerly, and both Europe and America have, in consequence, come to be very largely supplied by the West Indies. The great success recently of the fruit trade of these islands has given a useful suggestion of India’s possibilities. There would seem to be every chance that a large trade may in the future be done in exporting some of the fruits of India to Europe, more especially the thin-skinned Bombay Pomelo.”

The varieties of the citrons* with which we are familiar in this part of the country are (1) the lemon, known as *Mahajambhira* in Sanskrit and allied forms of it in all the vernaculars and as *Kalambak* among the Mahomedans ; (2) the Jambhira or sour lime known as *Nimba*, *Lime*, *nimma* and *elumichchai* all of which seem to be corruptions of the Sanskrit terminology ; (3) sweet lime which is regarded as the native of Western India ; (4) the orange which is known by the names of *Kamataphala* (literally, beautiful fruit) in

* The term *citron* is supposed to have been derived from a mistake of the Romans who got the fruit from Media and who wrongly connected it with the ‘cedron wood with which they were already acquainted.

Sanskrit and *naranj*,* *narratti*, etc., in the vernaculars ; (5) the bitter orange known as *kadarai* in Tamil and *nagaranga* in Sanskrit ; (6) the China orange or *kolunji*, *pitli*, *kichchili*, as it is variously called ; (7) the citron known by the different designations of *matulunga* (Sanskrit and some vernaculars), *turanji* (common to Arabic, Persian and Tamil), *naradabba*, *Ganapatinara* and *navalinga* etc. There are also other varieties, but they are not so important as these. All these are now cultivated in the tropical countries for the local as well as foreign markets, but each has had a distinct history of its own.

It is believed that the orange was originally indigenous to China, the lime to India, the citron to Persia and Media and the lemon to Arabia. The China orange (the *kolunji* or sweet variety) was first brought from China to India very early in history and then it was not only acclimatised but grew wild in woods and hills so that eventually it came to be known as the country orange. It was carried from India to Arabia in the 9th century. In the 11th century it was introduced by the Moors into Spain (Seville district.) It figured among the cultivated fruits of Rome and Palermo in the 13th century. (Dr. Maclean says that the orange was introduced by the Portuguese into Europe in the 15th century ; but this is obviously incorrect in the light of later researches on the subject.) The cultivation of orange in India throughout the middle ages is referred to by a number of writers, Sanskrit and Chinese records testifying to its naturalisation in earlier periods. Varthema says that Cannanore and Ceylon were famous for it and that the latter was the best in the world. Vertonanus, an Italian who visited the Vijayanagara Empire in 1503 observes that the country had neither wheat nor vine nor good fruits except the

* Sir George Watt says that “the name *aurentium* given by botanists to the orange does not come from *aurum* gold, but is derived from the Arabic *narandj*. This became *narandj* (narang) in Persian, and its equivalent in Sanskrit is *nagaranga* and in the Hindustani *Narangi*. Names that begin with *nar* generally denote fragrance. The name orange came to the English through the Moors, and became *naranjo* in Spanish, *laranga* in Portuguese, *arancio* in Italian, *oranger* in French, *orangenbaum* in German and the like.” But from the facts that the orange was known earlier in India than in Arabia, that the word *nar* is connected with the Sanskrit *Nasika* and the Tamil *Nar* (fragrance) and that the orange became a common fruit of India, we have more reasons to trace the name of the orange to the *narattai* of the Tamil country than *narandj* of Arabic which was only derived from the former.

orange and gourd. Baber mentions nine different kinds of citrons. Abl Fazl also refers to a large variety. He says that Akbar took an inordinate delight in fruit-gardening and got experts from Persia and Tartary. Linschoten (A. D. 1598) makes frequent mention of the oranges and lemons of India. Herbert (1677) speaks in highest terms of the oranges and lemons of Mangalore. Rumphins, writing a century later, refers to the fruits produced in the country as well as those got from China or Amboyna. The cultivation of sweet orange has thus had a very eventful history. From its original home in China* it has naturalised itself in India, in S. Europe and other parts of the world. As regards the bitter orange it was introduced into Europe even earlier. In fact it is regarded as the earliest variety to be introduced into that Continent. With regard to lime, the sour and sweet varieties of it, it is enough to state that it was "the chief budding-stock for all species of orange, lemonade or citron"; that it was indigenous to India, and it spread from here to the west. Lemons and citrons² are fruits of W. Asia long naturalised in the country. It may be added here that one variety of the orange, the *sengtereh* of Baber and the *santara* of the present day, was an introduction from Cintra in Portugal. It shows the solicitude of the Mahomedan rulers of India to introduce foreign fruits as much as to encourage indigenous ones. The variety has become popular throughout the country.

The pomelo—the *bombalimas* of the Tamil country—was originally a native of the Malay Archipalego. It was introduced into India and Ceylon from Java apparently in the 17th century. Baber and Akbar did not know it. "In India and Burma at the present day, it is one of the most common of fruits, but more especially so in Bengal and South India than in the United Provinces, the Central Provinces or the Punjab. The best quality is the thin-skinned Bombay pomelo, hence the South Indian name of *bombalimas*." (Watt). The fruit was introduced by a Cap. Shaddock into the West Indies. It was known to the Dutch traders as

* It is believed that it was introduced by way of Assam just like many other Chinese plants.

2. They are now chiefly in the Khasia and Garo hills and Kumaon and sparingly in the warm moist regions throughout the country. Baber mentions it. Lemon is not very commonly cultivated in India "except by the well-to-do and the curious."

Pompelmoes (i.e., pumpkin citron), from which some of the modern names are obviously derived. The fruit however is of all sizes, the biggest being common. The Bombay variety has got a great future before it. The *batavi* of the Telugu country was an introduction from the same region as the larger variety.

The Jack Fruit.

Another fruit very well known in Indian homes particularly on occasions of feasts and marriages is the celebrated Panasa or Jack-fruit. The Jack-fruit is known under its Sanskrit name in all the vernaculars but in Malabar it is known as *chakkai*, from which the Portuguese coined the word *Jack-tree*. Varthema's *cjecara* seems to be a corruption of this. It is now cultivated in the warmer parts of India and Burma and in the Eastern and Western Ghats up to altitudes of 4,000 feet. There are as many as 40 varieties but only five are of importance. The tree is indigenous to India. Almost all the early European writers refer to its cultivation in India. Friar Jordanus (14th century) is in raptures about it, though modern Europeans do not like it so much as the Indians.

Ananas.

One of the foreign fruits which have become very popular in India is the Ananas which, in slightly varied forms, figures in every dialect. A clue to its foreign character is clear from the terms *Parangi-halasu* and *Parangi-pilakkayi* (i.e., European jack-fruit) in the Kanarese-Tulu area, wherein it was probably first introduced from the west. The fruit was the same as the American Pine-apple, introduced by the Iberians into the Old World where it soon spread everywhere. It should be obvious from this that there can be no names for the fruit in any of the languages of Europe, Asia or Africa (Egypt) before the 16th century. When once introduced it came to be plentifully cultivated. A writer of the 16th century Christopher Acosta refers to its abundance in this country. As Baber does not mention it, while Jehangir alludes to its introduction, we may infer that it was introduced into the Mughal Empire some time in the reign of Akbar. The *kewrah*, a wild variety of the fruit in the Dakkan, mentioned by Abl Fazl might be the newly-introduced fruit. Whether this was the case or not, there seems to be no doubt that it was from India during this

period that the Chinese got the knowledge of the fruit. The cultivation of the fruit in the different parts of Europe began in the latter part of the 17th century. The cultivation of Ananas spread from the western part of South India where it was, as we have already seen, it was first introduced, to the eastern parts of the peninsula and became very common in the Western Ghats, Northern Bengal, Assam, and Burma. Thevenot, writing in 1687, says that the Indian pine-apple was as large as a Melon. Buchanan says that in the district of Dinajpur in his days the ananas were the fourth of the cultivated fruits in importance. Sir George Watt makes these very interesting remarks in regard to the habitat and prospects of the fruit. "It is thus not by any means exclusively on the littoral tracts, nor within the inundated area of India, that the pine apple has attained its greatest perfection, but rather considerably inland and on the dry, sandy loams of the lower hills and terai, though in tracts of country subject to a high annual rainfall. A warm moist, atmosphere and a well-drained sandy loam would appear, therefore to be essentials for success with the pine apple." He adds elsewhere: "In India while the plant is extremely abundant as a fruit grown in gardens and in some localities has even become completely acclimatised, little or no effort has been put forth to improve the quality or to develop, on a communal basis, the industry of pine-apple growing, which it would appear might be originated with advantage to India and profit to those concerned." Dr. Maclean, who believes that the fruit was first introduced from Moluccas into Bengal by the Portuguese, asserts that the sweetest variety is that of Ceylon. The medicinal and industrial uses to which the fruit and plant were put by the Indians shows that they were not unaware of their value though, commercially speaking, they have failed to utilize the facilities afforded by the country. Even the little cultivation is in the hands of the Europeans, as Dr. Maclean points out.

The Poppayi or Poppali Melon.

Another common fruit which is foreign in origin is the Poppayi or Poppali which is found with the same name in every dialect of India. From its appearance it has been called in parts of India castor-oil-melon. The Burmese call it the fruit brought by a vessel, which corresponds to the terms *Parangi-maram*, *Parangi-amanakky* of Tamil. The name Pappayi was a corruption

of the original Carib name *ababi*, which the British tongue changed to Papaw. When once introduced into India by the Portuguese, the Poppayi came to be generally cultivated, the fruit being used for food and the bark for rope-making. It spread in the Mughal Empire apparently after 1605, as Abl Fazl does not mention it; but by the middle of the 17th century it was introduced into China from this country. The sweetest variety of the fruit is said to be at Chota-Nagpur and Assam.

The Guava.

Another common fruit which is consumed by the people of the south especially the juvenile population—it is not liked by the elders on the ground that it causes biliousness—is the *gova* which every street vendor hawks vociferously. The fruit is not Indian. It is an American fruit introduced into India apparently after the 15th century. The Mexican name for it is *guayuba*, which bears a very close resemblance to the Tamil name. The Arab name for it is *Juwafa* which is close enough to the American. When the Guava was introduced by the Portuguese into South India, the Tamils, Kanarese and Telugus came to know it by the foreign name; but among the Konkane, the Tulus, the Malayalis and the Sinhalese, it also came to be known by the name *Pera*, that is, the pear fruit. Amongst the Persians and Afghans also the name Pear is given to the guava. This is due to a very interesting mistake. The pear fruit never naturalised itself in India as the guava did, but the resemblance between the two fruits led to the mistaken use of the same name for both the fruits by the Persians and the Mughals. As Mr. Siddiqi points out, it was a mistake exactly like the one in connection with the word *sher* the Persian word for lion—being given for tiger in India. Apparently the popularisation of the name *pear* in mistake for guava in the west coast and from there to Ceylon is a work of the Muhammadans. Quite another interesting fact in connection with the Guava is that it is known as the *jam* fruit in different areas. The Telugus call it, for instance, *jam-pandu*, the Mahrattas *jamba* the Malays *jambu*, the Kanarese *shibi* and the Uriyas *jamo*. These allied words seem to have been derived from the latter part of the Sanskrit word *bahu-bija phala*, by which the guava fruit was for obvious reasons known among the Sanskritists. (*To be continued.*)

V. RANGACHARYA, M.A., L.T.

Environment and Economic Activities in the Madras Presidency.

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It is not seldom that geographers have been charged with magnifying their own *metier* and failing to appreciate the influence of other than merely geographic or physical factors on human and particularly economic activities. The theory of geographic 'control' or 'determinism' might have ceased to be in vogue and given place to one which seeks to point out the *tendency* of geographic conditions to bring about certain social results in the absence of disturbing factors.¹ Some critics of the deterministic school would not go even so far and predicate any positive activities as likely to ensue from a given set of conditions but content themselves with pointing out the *possibilities* of the geographic situation which are by no means *necessities*.² Whatever be the changes in the position taken up by the greatest exponents of the subject, text-books of geography and popular writings on the subject are not free from a narrow geographic bias in the explanation of all human activities.

A cursory examination, which is all that is possible in a paper, of the major economic activities in the Madras Presidency will reveal to us the varying degrees of influence exerted by physical factors in the material welfare, or the reverse, of the forty and odd millions inhabiting it. We may see that in some economic activities the influence of geographic factors is direct and dominant; in some others it is considerable though not obvious and in a few it is but slight and indirect. Man has in this ancient land successfully subordinated nature in not a few cases and wrung from mother earth more than what many other nations with similar handicaps have done. Nature has indeed had her revenges in a few cases and in some she still continues to dominate. But there is no reason why with repeated nice adjustments to the changing

environment which we have shown ourselves capable of in some spheres, we should be depressed by the doctrine of despair which mars the pages of some of the most distinguished writers of human geography so far as our country is concerned.¹

Variety of Physical Features.

What distinguishes the Madras Presidency from the rest of India is the extraordinary variety of physical features it exhibits. It has a long coast-line of 1,700 miles, and the sea, if it has not in the modern days of oceanic commerce served to confer any maritime importance to the Presidency, serves at least in rendering the climate over a large area comparatively equable. "Three months hot and nine months hotter" may be the characterisation of the Madras climate by the tired European;² but one who has experienced the extremes of heat and cold in continental India will have little to complain of our milder climate—though some hold that it is in the long run more enervating. But we have besides the narrow coastal plain and the river deltas and valleys—where the climate is humid and unhealthy—mountains and plateaux which wisely developed would offer healthier habitation for men. So far, wealth has centred in the alluvial river valleys and deltas, but the future may well lie with the more bracing uplands in the interior which might turn out to be the hub of industry if hydro-electric power were developed.

Variety of Soils and Crops.

Madras Presidency has besides its varied landscape and a wide range of climate a variety of soils unlike the great Indo-Gangetic plain in North India which has almost everywhere alluvial loam, more or less homogeneous. Our province has alluvium in deltas and river valleys, black cotton soil in the Deccan, sandy and saline soils along the coast and red and laterite soils elsewhere. This heterogeneity of soils in our province along with the variety in climate accounts for our variety in crops and several varieties in one and same crop.³ It may be a matter for satisfaction for some that

1. G. G. Ohlholm, on Generalisations in Geography, *Scottish Geographical Magazine*, 1916, pp. 507 et seq.

2. L. Fèbvre, *Geographical Introduction to History*, Foreward.

1. E. C. Semple, *Influences of Geog. environment*, p. 627.

E. Huntington, *Civilisation and Climate*, p. 85.

2. E. Thurston, *The Madras Presidency*, Chapter VI, p. 44.

3. Royal Commission on Agriculture in India, Appendix to the Report, pp. 286-7.

we are consequently self contained in respect of our food-supplies except sugar, for which, as we shall see, physical environment is far from responsible. But to have variety and to be self-contained cannot be altogether an advantage in this modern age of standardisation in industry and trade. Scientific work in agriculture becomes very difficult on account of the difference in physical conditions and the variety in agricultural practices which it gives rise to. Mass production of agricultural implements which alone can reduce costs and facilitate sale of spare parts is rendered difficult and even ruled out of the question in the present stage of rural education.¹ In the modern trade, particularly foreign trade, the aim is to get a large volume of one and the same quality of produce or of a few well-known grades so as to facilitate selling by samples and obviate the need for detailed inspection of all produce. However much the Agricultural Department may succeed in future in persuading the ryots to grow a few carefully evolved varieties and adopt uniform agricultural practice, inherent differences of soil and climate are bound to tell on the final produce. This lack of uniformity is a great handicap to any large-scale, co-operative or 'orderly' marketing. This diversity in agricultural practice tends to produce an individualistic attitude of mind on the part of the cultivator which is inimical to co-operation. According to a writer on co-operative marketing, this psychological effect of diversity in natural features is largely responsible for the failure of co-operative sale in England.²

Irrigation facilities and cultivation.

We have not merely a variety of soils and climates but also of irrigational facilities which have given rise to particular forms of cultivation. The most ancient river works in India are to be found in the Cauvery delta, the largest area under tanks is to be found in our Presidency, and some of the finest cultivation that is carried on in India is to be found on the garden lands of Coimbatore and other dry districts, with lift-irrigation from wells. Again, a high level of 'dry farming'—of which so much is talked of in recent times in the United States—has been for a long time in vogue in the Ceded

1. Report of the Agricultural and Trade Conference, Madras. (1914), p. 96.

2. F. J. Prewett, in the Year Book of Agricultural Co-operation, 1928 pp. 8—10.

Districts. A finer adjustment of agricultural practices and implements to climatic and soil conditions is hard to suggest.

Primitive tribes and occupations.

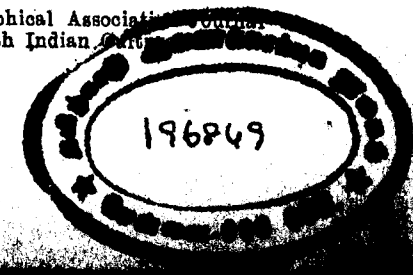
This diversity of natural regions—distinctly marked from one another—is a feature that has attracted the ancient Tamils; and in primitive times when the influence of environment should have been more dominant than in modern times, we may well believe that the different regions developed different types of occupation and of civilization, as expounded by an authority on the subject before our Association.¹ The present day classification of people according to occupation is far from simple, but we have still the representatives of the types described therein. We have still a large part of the population living in a nomadic condition in the hunting stage like the Nayadis of Malabar, the pastoral people like the Todas in the Nilgiris, the desert-land people the Maravars and Kallars who are but slowly being reclaimed from their pastime of raiding on their neighbours or passers-by, and the Sembadavars along the coast who still respond to the call of the sea in their fragile barks. In no other country perhaps are to be found such large survivals of primitive and predatory cultivators as we still find in our country; 'Podu' cultivation in the Agency tracts and 'Kadu holu' in the Nilgiris are but forms of clearing forests, growing some food crops for a few years and then abandoning the plots for fresh ones—all destructive of forest wealth and retarding agricultural development.

Effect of Environment on Agriculture.

We shall, however, confine our attention in this paper to the influence of geographic environment on economic activities in modern times. The relation between the two is not so clear or direct as in ancient times; for there are other than merely geographic factors to be taken into account in the explanation of many features of our economic life. Let us first take the case of agriculture which is of all activities supposed to be the most dependent on natural conditions. Even here we find sufficient illustrations to prove that nature often plays a subordinate part while the response to economic or commercial motives is more dominant.

1 P. T. Srinivasa Ayyangar., in the Madras Geographical Association Journal. Vol. III. No. 4. The Geographical Basis of Ancient South Indian Culture.

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The Case of Rice.

Rice which is the most important crop in the Presidency and occupies a third of its area is grown on all varieties of soil and climate, though the ideal of loamy top-soil and clayey sub-soil with an abundance of heat and water supply cannot be found except in the river valleys and deltas. The wide range in the acreage yields in the several districts is itself an eloquent testimony to the indiscriminate cultivation of rice.¹ But it is a cereal which responds best to intensive cultivation and is capable of sustaining a larger population per acre than millets which it has a tendency to displace—though the supercession of millets by rice in the dietary of the working classes is deplorable from the point of view of their health and efficiency. It is a matter for serious consideration whether with improved agricultural practice a more concentrated and suitable area of rice will not meet our rice requirements and if the latter should not be reduced by the utilisation of 'coarser' food grains—releasing some of the river and lift-irrigated lands for even more valuable crops than rice.

Expansion of area under Ground-nuts.

Next to rice and millets, oilseeds are the most important crop in our presidency; and groundnut is the most important of the oilseeds. Our Presidency has three-fourths of the entire groundnut area in India. In respect of our sea-borne trade, groundnut now takes the pride of place. But the expansion of the area under groundnut since 1900 when the Mozambique seed was introduced has not been determined so much by the suitability of the soil and climate to the crop as by the economic facts that it is an excellent money crop to grow, for there has developed a ready market for the same, and, more than that, that it does not require a heavy outlay of capital—though the fact that it is not fastidious in its requirements of water, which is the greatest limitation in the tropics, has also to be taken into account. It is now grown even on soils, once considered to be entirely unsuited to its growth, like the heavy black cotton soil of the Ceded Districts. It is an ideal leguminous crop for rotation with rice, millet or cotton; but it is grown year after year without rotation in some tracts, because it is a money crop (as cotton was continuously cultivated in the

¹ The normal yield according to the Season and Crop Report varies from 800 to 1000 lbs. of Paddy on unirrigated land and from 1800 to 2000 lbs. on irrigated land.



Southern States of U. S. A.), though the growers may have ultimately to rue for their short-sighted policy which results in deterioration of yield and in the greater liability to disease and the excessive addition of nitrogen to the soil.¹

Small area under Sugar-cane.

The crop which more than rice or groundnut illustrates the dominant influence of the economic factor is sugarcane. We have been told by the Indian Sugar Committee that Madras Presidency is the most favoured of all provinces in India in respect of the climate required for the cultivation of sugar-cane.² Sugar-cane is an essentially tropical plant. It is in Madras that the thickest canes are grown with largest sucrose content and they grow quickly. The fact that Coimbatore, in the southernmost corner in India has to be the All-India breeding station for sugar-cane is itself significant of the favourable climatic conditions we have. Agricultural practice is by no means inferior; and we have tracts with a perennial supply of irrigation water. Yet it is in subtropical Northern India—the United Provinces, Bihar and the Punjab,—that more than three-fourths of the sugar-cane area (2½ million acres) are found, while Madras has only a paltry 120,000 acres under cane. Now, impediments to the expansion of the area under sugarcane in Madras are more economic than geographic in character. There is here a marked preference for cultivation of rice, wherever irrigation is available, to that of sugarcane; for, the cost of cultivation of the latter is many times heavier, the fluctuations in prices of jaggery are greater, the competition of Java sugar is increasingly felt even by sugar factories, due to the efficient organisation on the agricultural as well as manufacturing side in Java. The greatest limitation, however, is the difficulty felt by individual ryots in the making of jaggery on a small scale with all the attendant cost of time, money and energy and the risks involved. In Northern India the difficulty is to a great extent got over by the existence of a number of large sugar factories which absorb the canes grown in the neighbourhood. The Sugar Committee therefore thought that the best

1. (a) J. Mackenna, Agriculture in India, p. 74.

(b) B. D. Anstead's Evidence to the Agricultural Commission, Madras Volume p. 45.

2. Report of the Indian Sugar Committee, Chapter X.

incentive to enlarged production in South India would be the establishment of big sugar mills, as in the north, which would create a demand for cane.¹ But no factory, particularly in a period of slump like the one we are passing through, is likely to be set up without an assured supply of canes on at least a couple of thousand acres in the neighbourhood. So, in addition to our fuel difficulty, we find capital fighting shy. To break this vicious circle is by no means easy. But as long as there is a demand for jaggery at prices slightly higher than for sugar, a less costly method of meeting the difficulty would be to install on co-operative lines oil-engines and small power mills for the joint crushing of cane and the manufacture of jaggery on improved furnaces. This would help the grower to concentrate his attention on the cultivation of cane.

Unimportance of Fruit Culture.

The case of fruit culture is an excellent instance of the economic sway. The Royal Commission on Agriculture has drawn our attention to the deplorably stationary condition of the area under fruit culture. There are tracts in our Presidency where the production of the fine varieties of mangoes, grapes, lemons and oranges and sapotas might be multiplied. But most of our farmers lack the knowledge of the cultivation of fruit trees on scientific lines. The Agricultural Department has not yet seriously turned its attention to horticulture. Little attention has been paid to the packing and transporting difficulties of perishables which are serious in the case of pulpy fruits in tropical climate. Again when capital is inadequate and unorganised for the financing of quick-growing cereal crops, how can it afford to wait without any return the long interval between the planting and the fruition of fruit-trees? But more than all, the demand for such agricultural specialities is so small in a country of poor peasant-proprietors with no big industries, that the danger of overproduction is great.

Our Cattle Wealth.

With regard to cattle wealth, again, it is not the geographic factor alone that explains the present numbers and distribution.

1. Report of the Indian Sugar Committee p. 152.
2. Report of the Royal Commission on Agriculture p. 589.
3. Sir F. Nicholson's pamphlet on fruit (issued by the Publicity Bureau).
4. Howard, Crop Production in India, Chapetr XVIII.

The breeding and rearing centres like Kangayam do, no doubt, have certain physical qualities, like lime and phosphorous in the soil—helping the building up of bones, and a rainfall which is considered too precarious for any good cereal crop but just suffices to promote pasture, so that there is no temptation to take to agriculture proper but only to concentrate on cattle breeding and rearing. On the other hand, the existence of a plentiful supply of green stuff in semi forest areas in the Alambadi tract which is not yet invaded by population from neighbouring tracts accounts for the fame of the Alambadi breed of cattle. This is so far as the supply side is concerned. But the demand for cattle must in the long run affect the supply. It is becoming increasingly difficult in deltaic and river-valley districts, as well as in dry inland districts, to maintain draught cattle—in the former case on account of the pressure of population and the encroachment of cultivation on wastes used for grazing, and in the latter, on account of frequent droughts, to tide over which is a job for human beings. In fact the tendency in all densely peopled countries, like China and Japan is to dispense with cattle. Indeed the human population is said to have crowded out the cattle; milk and milk products are not part of the dietary and spade cultivation is the vogue on the innumerable petty farms. It is by no means a sign of prosperity that we have still large numbers of cattle (22 millions) in our Presidency. Our average bullock is a poor draught animal and is an impediment to the introduction of improved implements. Our average cow is a very poor milker giving, according to an authoritative estimate made a few years ago, a return of only 3 to 4 pies per day.⁴ The evolution of dual purpose animals by selective breeding so as to result in cows rich in milk and oxen strong in muscle, the gradual reduction of the number of animals to the essential requirements of agriculture on the one hand and to the extent of pasture available on the other, and the stall feeding of animals with oil cakes and other concentrated stuffs would have to be resorted to if we should improve the condition of our cattle. And these are not geographic or economic problems merely. Religious difficulties are involved which are by no means easy to get over.

1. Sampson Madras Livs-Stock. pp. 15 and 16.
2. Ibid. pp. 23 and 24.
3. J. R. Smith, Food Resources of the World, pp. 178, 269.
4. The Madras Year Book, 1923 p. 792.

Our Forest Resources.

It is in the proper conservation and exploitation of forest resources that we find that we cannot easily work against natural forces. A great part of the Presidency must once have been a forest clad country, the *Dandakaranyam* of ancient fame. The struggle between forests and humanity should have continued here as elsewhere until the forests disappeared in all but regions with a heavy rainfall or high elevations. Increase of population in the years of peace and security following the firm establishment of British rule naturally led to increase of cultivation at the expense of forests. The Railways accelerated the pace of destruction in their neighbourhood as South India is far from coal areas and old locomotive engines were designed for burning wood.¹

Nature did not take long to have her revenges. For, where forests were cut down recklessly or young plants were suffered to be destroyed by indiscriminate grazing not only was there felt a diminution of the supply of fuel which led to the burning of cow-dung cakes and of green leaves for manure; but where the forests in the upper regions of the courses of rivers were so dealt with, rivers were flooded suddenly, the supply of water to old tanks failed and soil was eroded and river beds were silted up. The necessity for the conservation of forests was felt even half a century back in the interests of not merely the then living public but in those of posterity. The work of protecting forests from the depredations of man and beast has gone on for a long time, and we may say that the work has been well done, rather too well done and at too great a cost. On the other hand the work of exploitation on commercial lines of valuable timber, within of course the limits of safety, was not attempted seriously until a few years back. And here we come across great natural difficulties inherent in all tropical forests.

Reasons for low income.

We have one-seventh of the total area, or 13 million acres, under forests. But the net income, deducting the charges for the Forest Department, is often nil or a trifle per acre, while in Central European countries where the policy of scientific forestry has been followed for over half a century, the net income was said

1. The Book of the Madras Exhibition—Section on Forestry.

to be Rs. 15 per acre.¹ How can we account for our low income from forests in spite of the apparently better natural conditions—abundance of sunshine and moisture—that we have for luxuriant forest growth?

In fairness to our Forest Department it must be said that nearly 25 per cent. of the total area is what is known as scrub jungle which is of considerable value to agriculturists for the supply of fuel and fodder and green manure but does not contain valuable timber. There is surely a necessity to conserve this jungle in the interests of ryots. But it is best to entrust the administration to Panchayats as is being done for a few years past. This should release the costly and trained staff of the Department for concentrated work on the superior forests. Again 40 per cent. of the area is said to be reserved for reasons of climate and protection of water courses—though it is incidentally expected to yield some valuable timber. It is thus 35 per cent of the total area that is available for the growth and exploitation of valuable timbers.² There are several valuable species of trees in this area, but they are not suitably situated for purposes of commercial exploitation. For, like all tropical forests, ours have certain inherent difficulties compared with temperate ones. Our forests are largely jungles containing a few valuable species like teak, mahogany, sal and sandalwood in the midst of a bewildering variety of inferior trees, creepers and brushes which positively hinder extraction. We have not that solid stand of one kind of coniferous tree as is the case in temperate forests—though we are trying to make up slowly by artificial plantations. The maintenance of our forests is costly; for it is so difficult to keep down rank vegetation that an officer complained to the Indian Industrial Commission that bridlepaths which had been cut had been so overgrown with vegetation that inspection of forests had to be done by means of a telescope and that less produce was extracted in 1917 than 25 years previously.³

Transport is a peculiarly difficult problem in the tropical forests. There is no blessing of snow or the frozen river. Our streams are overfull for a short season and then dry up: and some

1. H. Tireman in the Madras Legislative Council Proceedings 19th March 1924, p. 728.

2. Madras Year Book, 1924, pp. 861–66.

3. Indian Industrial Commission Madras Evidence p. 24

of our valuable species are too heavy to float on water. There are, again, many useful species of which the market is ignorant. There are many varieties of timber trees which need to be advertised and standard scantlings of which should be made available. This is a work that private enterprise cannot be expected to perform and so the State should take it up. We fail to exploit the annual increment of valuable timber; and it is said that trees fall down and rot. Besides, yielding no revenue to the State they are detrimental to the growth of younger trees.¹

Large Scale Manufactures.

It is with reference to our potentialities in large scale manufacturing industries that diametrically opposite deductions are drawn from our environment. It is a popular belief that the existence of a plentiful supply of raw materials which we are now exporting affords the opportunity for the development of many industries. People ignore or are optimistic about the other factors necessary for the carrying on of industries, *viz.*, adequate supply of efficient labour, free flow of capital, capacity for organisation and above all cheap power. On the other hand the absence of the last factor (cheap power) constitutes according to some the greatest handicap to the development of manufactures in the Madras Presidency.

There are others who hold that even with the supply of cheap power we are destined to remain an agricultural country due to our lack of capital and of powers of organisation and of efficient labour. This is said to be a characteristic not peculiar to India but is common to all tropical countries.²

Power: Coal.

Let us first concern ourselves with the geographic factors of cheap power and raw materials. Coal has been for over a century synonymous with large scale industry that a country without coal has been doomed to damnation in respect of manufactures. Madras has no coal mine in its area; and it is far away from the coal fields of Bengal and Bihar. Though Mr. C. W. E. Cotton in the census of 1921 spoke of the prospects of coal in the Godavari valley, (the Singareni field was believed to extend up to Rajahmundry) and of lignites near Pondicherry,³ no attempt has been

1. Madras Leg. Council Proceedings 19th March 1924. pp. 728. *et. seq.*

2. (a) Semple, Influences of Geographic Environment pp. 628 & 629,
(b) J. R. Smith, Industrial and Commercial Geography, p. 670.

3 The Report of the Madras Census p. 188.

made to mine either of them so far. J. S. Brown in his book on the *Mineral Wealth of India* makes no mention of coal in the Madras Presidency. The policy followed by Railways in the transport of coal is by no means encouraging to indigenous enterprise. Coal in Madras is said to cost calory for calory three times as much as in England.

Wood-Fuel.

Utilisation of wood fuel,—not by direct combustion—but by the modern process (adopted in the Badravati-Iron works, Mysore) of dry distillation by which not merely charcoal is obtained but many by-products, including combustible gas, are recovered, has been advocated by persons like Sir Alfred Chatterton¹ who recommended the plantations of quick growing woods like the Casuarina. The chief difficulty—even in Mysore—seems to be the difficulty of finding a market for all the recovered by-products. We may wait and see for some time longer the results of the experiments in Mysore.

Hydro-electric power.

Hopes have been raised of the prospects of 'white coal' or hydro-electric power. A rosy picture is drawn of the possibilities of hydro-electric power in the smelting of our low grade iron ores in Salem and the manufacture of high speed steel, in the manufacture of aluminium from the bauxites of Vizagapatam, in the manufacture of paper pulp from the quick growing bamboos of the Godavari valley and the West Coast, and in the fixation of atmospheric nitrogen for fertilising our lands. It may also resuscitate our cottage industries by distributing cheap power to home workers and raise the efficiency of agricultural operations by supplying power for pumping, etc. The possibilities of developing power in certain sites have been closely investigated and work has already commenced in connection with Pykara scheme in the Nilgiris. The Palnis, the Shevroys, the Anamalais and the Kollimalai, and the Colaba river area in the Agency tracts await closer investigation. What look like immense possibilities may have to be given up if suitable storage facilities (for almost all our falls and streams are seasonal) are not available or the cost of constructing storage works or of transmitting power over rugged countries for long distances

1. Vide his *Industrial Evolution of India*, pp. 258—272.

means heavy initial expenditure.¹ The maintenance and working charges might be small but charges by way of interest would mount up to a prohibitive extent.

Relative Importance of Raw Materials.

All economic geographers recognise the fallacy underlying the crude popular belief that the availability of raw materials in abundance is the most favourable factor for the location of manufacturing industries based on them. We have an abundance of cotton, oilseeds, hides and skins and tan materials which we largely export as raw materials instead of manufacturing goods out of them. We have a large potential sugarcane area and a large actual area of bamboos unexploited in our forests though they have been pronounced by experts to be excellent material for the manufacture of paper.² And yet we have only a few cotton mills, a few oil mills and leather goods factories, fewer sugar mills and practically no paper mill now. The following generalisation quoted and illustrated by Prof. Chisholm will help us realise the relative importance of various raw materials in the location of industries (if we exclude from our consideration other factors like capital, labour and organisation):

*Raw materials tend to attract industries to their place of production in inverse proportion to the amount of the raw material that enters into the final product.*³

This generalisation applies also to half-manufactured raw materials like pig iron and paper pulp. Time does not permit the elaboration of this formula; but let us at least note the power of coal to attract industries. Coal as fuel does not enter into the final product at all, hence the cost of carrying coal which is also bulky is avoided except in countries to which coal can sail cheap in ballast or in industries where fuel is not an important item of cost of production.

Iron and Steel industry.

We may note in passing the prospects for iron and steel and cotton mill industries in Madras. There is little hope of building up an iron and steel industry with the plentiful ores available

1. Hydro-Electric Survey of India Triennial Report, 1919-21.
2. Bulletin of Indian Industries and Labour, No 24—on Paper by Marsden, pp. 37-44.
3. G. G. Chisholm. Hand-book of Commercial Geography. p. 100.

in the Salem District without a supply of cheap power like hydro-electric power. Charcoal is out of the question as a large area of forests in the vicinity—224,000 acres at least would be required to work the minimum smelting furnace. There is also a conflict of opinion on the richness of the iron ores available in the Kanjamalais.¹

Cotton Mill Industry.

The establishment of the cotton mill industry in the northern districts to utilise the short staple cotton and the expansion of the mill industry in the southern districts where long staple cotton is produced are desirable in view of the nearness of the supply of raw material, and of labour which for want of work at home is emigrating for sustenance wages abroad, and of the existence of a big market almost at the doors of mills. But there are difficulties. Apart from the lack of coal and of the peculiarly humid climate—to make up for which artificial humidity must be resorted to—it will not be easy to induce capitalists to invest in an enterprise which is increasingly feeling the competition of Japan, unless a more aggressive manifestation of goodwill on the part of Government towards the industry is forthcoming and an atmosphere of co-operation between management and labour prevails. Employers should be ready to introduce improvements in the shape of new machinery and of structural alterations and the labourers should be prepared to increase their own efficiency on the lines recommended by the Indian Textile Tariff Board of 1927.²

Efficiency of Labour.

Our labour, agricultural and industrial, is cried down as inefficient and much of the blame is thrown on climate though diet, race, religion, educational system and social and political institutions all get their share of the blame. Our climate is said to be far too hot and enervating for any high output of work, particularly in closed factories (while in respect of work in the fields, cultivators take advantage of the cooler hours in the morning). The seasonal character of our rainfall which keeps our field workers unemployed for a long period of the year has a demoralis-

1. Report of Dr. Murray Stuart to the Govt. of Madras reproduced in the Mysore Economic Journal Jan. 1920.
2. Vide Chapters IX to XII.

ing effect on their work habit, unless they have any subsidiary industry; while if they resort to factories for work in the off season it leads to absenteeism on a large scale in the sowing and harvesting seasons with its deleterious effect on their own efficiency as well as on the wellbeing of the enterprise. Tropical diseases like malaria and hookworm, though they are not spectacular like plague and cholera in their fatal consequences, are in their own way quite dreadful in that they insidiously undermine health and strength and reduce productive capacity. The All-India Conference of Research Workers in 1926 held that the average number of days lost to labour by each person in India from preventible disease was not less than 20 per cent; and that the wastage of life and sufficiency which resulted from preventible disease cost India several crores of rupees.¹ Major Russell (Director of Public Health, Madras) said that 80 to 100 per cent. of the people in rice (wet) districts who were examined suffered from hookworm.²

Effects of Malnutrition.

Add to this the injury inflicted by malnutrition as discovered by research workers in dietetics. Surgeon-General Hutchinson pointed out³ that in the East Coast districts it was very common to find a worker taking 24 to 30 oz. of rice per day but only 1 oz. of dhal with an occasional addition of meat and a regular and excessive use of condiments. This diet is far too poor in protein and far too rich in carbohydrates, which impairs the digestion of the poor protein intake. He contrasted it with the diet prescribed for the Indian troops which contains 24 oz. of rice, 3 oz. of dhal, 3 oz. of meat or 2 oz. of ghi, and 6 oz. of vegetables, etc. Lt. Col. McCarrison's recent researches into deficiency diets in India have revealed the fearful effects on the health and efficiency of the consumers of typical diets of various provinces. According to him Madras diet is the least satisfactory diet in India while the Punjabi's was the best and next came the Maratha's⁴.

But in spite of these handicaps, it cannot certainly be asserted that the Madras labourer is inferior to any in India in respect of acquiring proficiency in skilled labour. He has won a name in the

1. Quoted in the Agricultural Commission Report. pp. 481-82.
2. Agricultural Commission Evidence in Madras pp. 732-3.
3. Agricultural Commission Evidence in Madras (pp. 732-3).
4. Agricultural Commission Evidence Vol. I, Part II pp. 95 et. seq.

plantations abroad and textile labour in Madras, particularly in Buckingham and Carnatic Mills, is the nearest approach in India to Lancashire labour.

Unfair Comparison.

It is also unfair to cry down the labourer when the conditions in which he is asked to work are decidedly inferior to those obtaining elsewhere, for example in respect of up-to-date machinery, scientific management, and welfare work. Again the very cheapness of labour in our country leads to the deliberate employment of a large number of hands with a view to minimise damage to machinery and maximise output per machine.¹

Lack of Capital and Leadership.

Indeed it is in leadership and managerial ability that we seem to be even more lacking than in skilled labour. Neither our educated leaders nor our capitalists in the South seem to have taken kindly to industrial enterprises, even to the extent to which their *confreres* have done in Western India. The Indian Fiscal Commission tried to go further in the explanation of this difference than the Indian Industrial Commission. They said that in Western India the Mohammedan, Parsi and Guzerati capitalists had shown for centuries a marked instinct for commerce and from commerce they had moved naturally to industries. But the people of Madras, Bengal and other provinces had in general neglected industrial pursuits or left their development to other people (the European and the Marwadi). They suggested that this might be due to the "fertile soil providing a livelihood in return for little labour", to "the social system which exalts the less material side of life", and to "historical traditions attracting the most enterprising to administration".²

Though the reasons given by the Fiscal Commission for our industrial apathy are somewhat flattering to us, the whole subject needs a closer investigation, which is beyond the province of geography alone and necessitates the co-operation of sister sciences.

1. R. K. Das : Factory Labour in India, Chapter VI.
2. Report of the Indian Fiscal Commission. p. 40.

Discussion on the Paper.

An ordinary meeting of the Association was held at 5-30 p.m., on Wednesday the 29th August 1929 when Mr. K. C. Ramakrishnan, M.A., Lecturer in Economics in the University of Madras, read a paper on "*Environment and Economic Activities with special reference to South India.*" E. W. Green Esq., M.A., Principal, Government Muhammadan College occupied the chair. Among those present were Mr. P. F. Fyson, Prof. V. Rangachari, Major A. M. V. Hesterlow, Miss F. A. Baker, Miss H. A. Edington, Mr. A. Appadorai, Mr. M. S. Sabhesan, Mr. V. K. Sourirajan, Mr. M. P. Sitaraman, Mr. V. Narayanan, Mr. L. R. Sundaresan, Mr. S. S. Krishnaswami, Mr. M. D. Manickam, Mr. S. Viraraghava-chari, and Mr. N. Subrahmanyam.

After a few introductory remarks by the Chairman, Mr. K. C. Ramakrishnan read the paper (published above).

At the end of the paper, a discussion ensued.

Mr. N. Subrahmanyam said that geographic determinism had its day but it was no longer the creed of geographers who were prepared to give due weight to extra-geographic influences as well. With regard to cattle he pointed out that it was not necessary that every tract in which cattle were reared or worked should have plenty of pasture but that it was possible for cattle working in plain pastureless tracts (like the Godavari and Kistna deltas) to recoup themselves by periodical visits to green uplands in the interior. As for diet in the East Coast Telugu Districts he did not know if the diet of the workers was so different from that of the middle and upper classes who consumed a lot of pulses.

Mr. M. S. Sabhesan doubted the wisdom of restricting the area under rice and increasing that under sugar-cane. He asked if it would not lead to a situation when we would have to depend on foreign countries for even our most essential requirement. He suggested that one of the difficulties of sugar manufacture was the want of sufficient protection by the State.

Mr. V. K. Sourirajan said that the failure of forests to bring in any appreciable net revenue to the State was as much due to

mismanagement and miscalculation, as illustrated in the case of Russelkonda Saw Mills, as to climatic causes.

Major Hesterlow agreed with the lecturer that the tendency to substitute the consumption of milled rice in the place of millets was growing and it was reprehensible. He alluded to the prevalence on a large scale of Beri-beri in the Circars and the Chingleput District. More investigation was, however, needed to establish close relationship between climate and diet on the one side and health and efficiency on the other.

Mr. A. Appadurai believed that it was possible by the adoption of improved methods of agriculture to raise the yield of rice and that the expansion of area under sugarcane need not mean smaller rice production or consumption or the necessity to import rice.

Mr. E. W. Green, the Chairman, in his concluding remarks said that he was himself more of a historian than a geographer or economist; but he agreed with the point of view of the paper read that there was a tendency on the part of geographers to attach too much importance to geographic influences and to ignore, for instance, the influences of tradition, education, political institutions and the like. A proper study of history would be a needed corrective. He was, however, struck with the arguments advanced in the paper by the low commercial value of forests, in this country, and could well appreciate the difficulties of economic exploitation. He wished that in every case dealt with in the paper, a complete tracing of the influence of geographic environment on the production and distribution of the commodity had been attempted. The subject needed very much more attention than that given to it so far.

The meeting closed with a vote of thanks to the Chairman and the Lecturer.

Two American Pictures.

I have been asked to contribute a note on a couple of geographical features arising out of my recent tour of the globe.

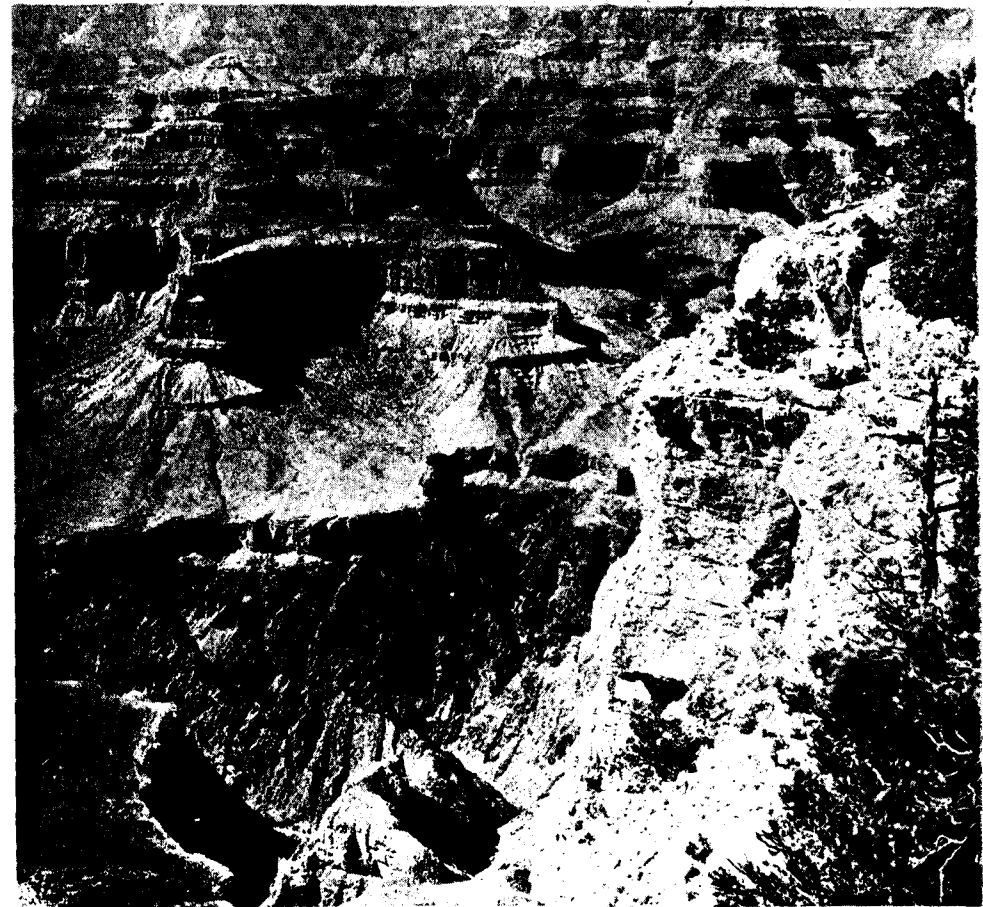
First, one which I cannot illustrate visually, a feature of what I like to call the active factors in human environment, to wit, climate. I was staying for a couple of months up the Ojai valley

in California, about fifteen miles inland. There was no rain for months, which meant a wide range of temperature. One night I noticed a curious mixture of cool and hot in the air, like two waters in a bath. By and by the hot prevailed. It was a wind from the desert that occasionally comes down over the hills into the valley. It kept the thermometer inside my house at 100° Fahr. until after 10 o'clock at night, and made me long for the coolness of Madras.

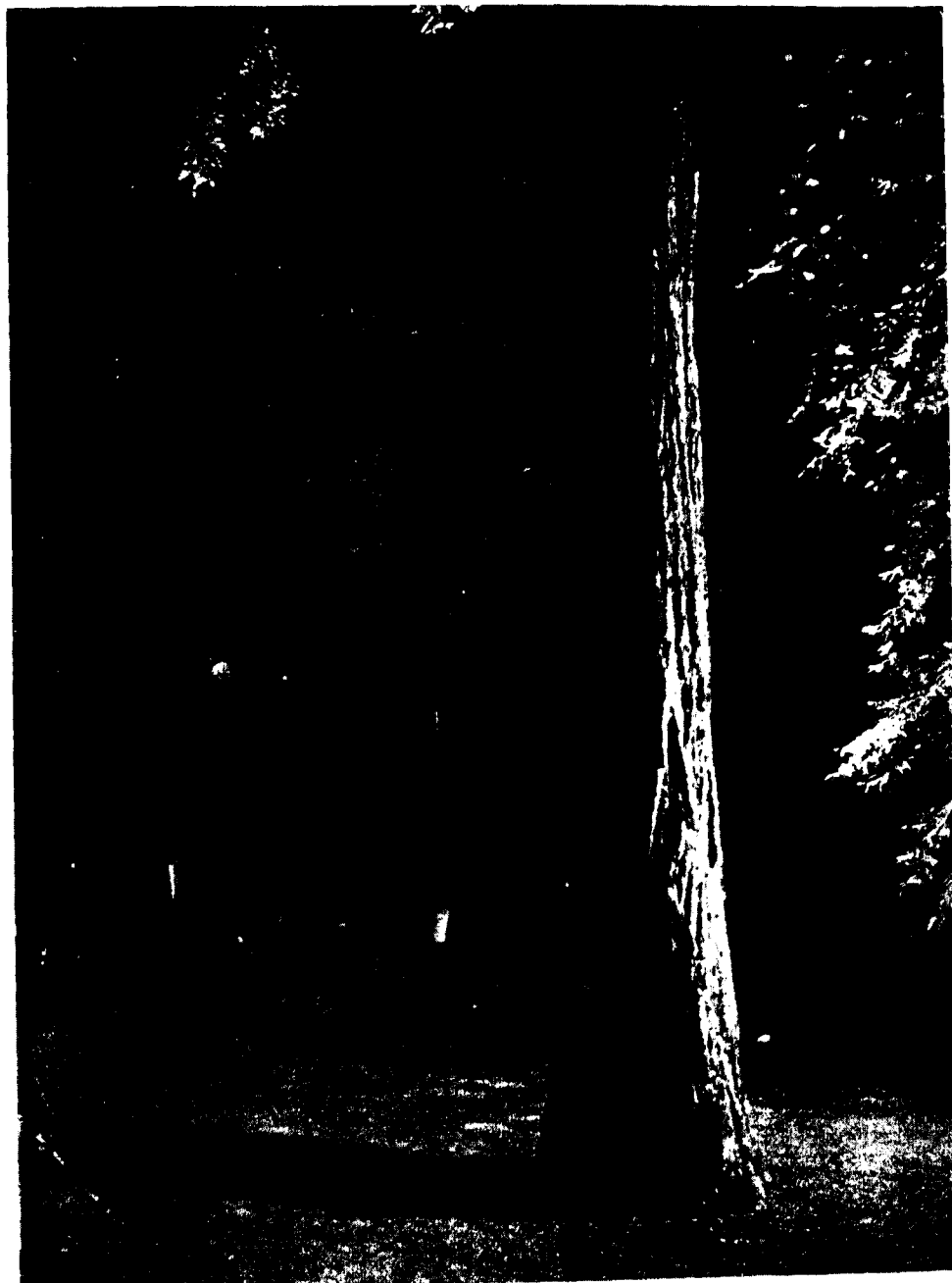
Of the passive factors, the geological, the Grand Canyon of Arizona was the most spectacular of what I saw. Recently a geologist stated that it was the fifth cutting by the Colorado River. Former canyons, cut through older stratifications, have vanished. The present is the result of upliftings and subsidings of the earth's crust and of river and climatic erosion. The first sight of it as one approaches it from the south can never be forgotten. The railway runs across a stretch of arid land, and ends on the rim of the canyon which falls away to from five to six thousand feet to the river bed. Three features strike the eye, the great size (ten or more miles across and right and left as far as the eye can see 200 miles by measurement): the extraordinary shapes that have compelled the names Brahma Temple, Buddha Temple and the like; and the wonderful layers of reddish and yellowish colouring that dims and glows in the varying light of day. There is no water for a hundred miles along the rim on either side of the hotel settlement. Water trains bring the necessary supplies over long distances.

The item amongst the vital factors that lingers in my memory with profound impressiveness is a "big tree" grove to which I made a short detour on a motor drive from Santa Barbara to San Francisco along the Californian coast. A combination of soil and climate has enabled the redwood trees to do their best as to size and age. The highest is 306 feet, the thickest 72 feet in circumference, the oldest 5,000 years. They have survived forest fires, as one could see. Their vitality and recuperativeness are observable in their closing up of holes that had been made to give light in hollows one of which can hold 75 people. The feeling of vastness and antiquity was almost depressing.

JAMES H. COUSINS.



THE GRAND CANYON OF ARIZONA.



A BIG TREE GROVE IN CALIFORNIA.

Geography in India and Abroad*

By

MR. N. SUBRAHMANYAM, M.A., L.T.

(Teachers' College, Saidapet.)

In this short paper it is proposed to point out the relative position which an important subject like Geography has been made to occupy in Indian and foreign educational systems with a view to calling the attention of educationists and others to take early steps to rectify the defect in this country and bring the subject into line with its position abroad.

It is unnecessary at this time of the day to expatiate at any great length on the civic, educational and national importance of this subject whose worth and value have been generally acknowledged and appreciated in all foreign educational systems by a proper place being accorded to it. The tremendous revolution that has taken place within the last generation in the scope, content and method of study of what is but a Cinderella here is not yet generally known in this country; and the mention of the word '*Geography*' suggests to several people only the sailor's Geography that it was with its over-emphasis on lists of place-names, commodities etc., and not the science of human ecology that it has developed into.

Modern Geography is the science that describes and explains the life and activities of man in different regions of the world as the resultant of the interaction between the physical factors of environment and human ingenuity. It is such a far cry from the factlore of old Geography to the complex and comprehensive science of Modern Geography that it is a misnomer to apply that name to the latter. It cannot, however, be called '*Geology*,' though it has developed into a '*logos*' or science, since one of the sciences, born in the last century, dealing with the study of one aspect of Mother Earth, has already appropriated that title. On account of its composite nature, the subject naturally comes into close relationship

* A paper read at the 5th Conference of the All-India Federation of Teachers' Associations in December 1929.

with the sciences dealing with the earth and those dealing with man and helps to put their findings in proper perspective to produce a connected and reasoned account of the earth as the Home of Man. From this point of view the name 'Geosophy' or philosophy of the earth has been suggested as an appropriate name for the science. But, by whatever name it may be called, its value is unquestioned.

Apart from its practical value in everyday life to the agriculturist and the artisan, or the merchant and the manufacturer, Geography affords good intellectual discipline if taught on right lines, and helps to build up a world outlook so essential in these days of world communications, world trade, and world politics. Against the narrowness and one-sidedness, resulting from excessive specialisation, which has been carried down to the school, the proper study of a correlating subject like Geography, which co-ordinates the fruits of other studies, acts as a necessary corrective. Dealing with the world's workers and the conditions amidst which they work in mutual co-operation in the production of commodities which satisfy the daily needs of mankind, Geography helps to foster a width of sympathy and a depth of culture, which generally accrues from the proper study of a social science. From the national point of view also, Geography is of very immediate importance, since the work of national uplift lies not merely in the political sphere but also in the economic one of working up the resources of the country, which of course is founded upon an intensive study of the geography of the country as well as of the world markets for its produce—a study not merely of the school or the college but of post-graduate research work also.

It is for these reasons that Modern Geography holds its pride of place in the educational institutions of civilised countries. The highest degrees in the Arts, Science, and Commerce Faculties (B.A., M.A., B.Sc., M.Sc., B. Com., M. Com.) as well as special diplomas have been instituted in almost every foreign University. Even some of the newer Universities, like those of Sydney and South Africa have provided for a D. Sc. Degree in Geography, while Chicago has a Ph. D. Degree. Cambridge has its Tripos in two parts in Geography as in other subjects; and for the Imperial Civil Service Examinations Geography carries along with one or two other subjects 400 marks while each of the remaining subjects carries only 200 marks.

A subject of such high importance abroad unfortunately occupies a very low position in the educational systems of our country. There seems to be a lurking suspicion in the minds of some of our countrymen that Geography is a subject unworthy of academical place and honours. What has been stated above will, it is trusted, show that it is not a whit behind several of the studies which have been regarded as the Blue Ribbon of scholarship at our Universities.

Thanks to Prof. L. D. Stamp of Rangoon, that University is the one in all India so far as I am aware, where Geography has been firmly established with the rank of a Degree subject. One or two other Universities seem to be in a fair way to it. Already some Universities, like the Punjab, Madras and the Andhra have included it as one of the options of the Intermediate course, though very few colleges have made provision for the study of it. In the Schools Geography has usually a place accorded to it, and the Matriculation or the School Final Course generally includes the subject within the scheme—though the teaching of it does not appear to be quite on modern lines everywhere. It was in this Presidency, however, that for very nearly half a generation, Geography was removed from the curriculum of the higher classes of the High School, with the result that it reacted adversely on the teaching of the subject in the lower classes also. Luckily in the reorganized S. S. L. C. scheme, Geography has been given a footing, though not its proper place; and owing to the paucity of qualified teachers in the subject, there is wrangle over a meagre syllabus which is felt to be heavy.

The contrast between the position of Geography in India and abroad is thus very striking; but there appears to be some prospect of a better position being accorded to it in course of time in this country also. The reform, however, is very slow in coming, having got to fight its way against odds—against *ignorance, lethargy, prejudice and ridicule*. It is hoped that educationists all over the country will ere long realise the educational, national and international importance of Geography, and make their best endeavours to lift up the subject to its proper place, and bring it into line with its position in all foreign educational systems.

Reviews.

Travellers Round the World (Tamil) by Mrs. A. Devasahayam. (Christian Literature Society for India).

Primer	3 annas	Reader III	5 annas
Reader I	3 annas	Reader IV	5 annas
Reader II	4 annas	Reader V	6 annas

Geographical readers are practically non-existent in the South Indian vernaculars; and for this reason at least these volumes are specially welcome. Mrs. Devasahayam has brought to bear her ripe experience as a teacher, and has prepared them on a plan graduated both in language and matter. The books are profusely illustrated, and are fit to be used as additional reading books in the lower classes of elementary and secondary schools.

The C. L. S. Geographical Series: First Year in Geography—Parts 1 and 2. Price 3 annas each. *Second Year in Geography*—Part I Price 5 annas. (Tamil and Telugu) by Miss P. S. Darling. (Christian Literature Society for India).

Miss Darling has done a great service by the preparation of these Geography books for South Indian children in their mother-tongue. Avoiding the logical adult point of view unfortunately so common here, she has attempted to convey in simple language and in story form a knowledge of how people live in other lands without sacrificing accuracy or correctness of geographic detail. Each lesson is illustrated with characteristic pictures of the region dealt with, and has appended to it suggestions for practical work by way of exercises and diagrams. So far as preparatory Geography is concerned, this series is indeed an oasis in the desert!

Geography of the Bellary District (in Kanarese) by K. Sethu Rao. (P. Butchayya Chetty & Son, Bellary). Price 7 annas.

This is one of the old type of district geographies with a systematic and matter-of-fact treatment, filled with information of all kinds pertaining to the district. The author is apparently not aware of recent progress in the pedagogy of Geography, Part I which treats of General Geography, contains lessons, though in dialogue form, on mountains and rivers, sun, moon, eclipses and stars. Part II, which treats of the Geography of the District, is too logical and too full for use in the class for which it is meant.

Geography of the Nellore District (in Telugu) by A. Jayarama Rao. (Venkata Ram & Co., Ellore). Price 4 annas.

This book is refreshingly on a novel plan, quite away from the usual rut. Instead of trying to stuff the pupils with all kinds of facts regarding the district, the author has made an attempt to convey a real picture of different regions of the district in a descriptive way through journeys by all the modern modes of locomotion. The treatment, however, has been unequal; and there has been some compromise with the old method in chapters 11 to 16. On the whole, it is the first of district geographies that has shown originality of plan and method.

Geography of Villupuram Taluk (in Tamil) by K. Narayanasawmy Iyer. (Hanuman Press, Villupuram). Price 2 annas 6 pies.

This is meant for children, but is on the logical plan with over-emphasis of facts. We wish that authors of geography books for children would acquaint themselves with recent progress in teaching methods, and turn to some of the best children's books abroad for inspiration and model.

News and Notes

The quarter ending 31st December, 1929 was an active period for the Association, and half a dozen meetings were held. On 26-10-29 Dr. B. Sunder Raj, Director of Fisheries, delivered a lantern lecture on "*South Indian Pearl Fisheries*" with Mr. R. Gopalan of the Presidency College in the Chair. On 18-11-29 Sir C. P. Ramaswami Ayyar, who returned from England by Air Mail, delivered a lecture on "*Air Travel*", when Mr. G. G. Armstrong, Chairman of the Madras Port Trust presided. On 11-12-29 Mr. N. S. Arunachala Ayyar spoke on "*Trichinopoly under the Sea*", illustrating the lecture with several specimens from his collections, when Miss I. H. Lowe occupied the chair. On 18-12-29 Mr. C. Brooke Elliot delivered a lantern lecture on "*A City built on Sand*", when Mr. R. J. C. Robertson presided.

* * * *

The fifth Conference of the All India Federation of Teachers Associations, which held its sessions in Madras during the last Christmas holidays, attracted a large number of mofussil members

of the Association; and their presence was availed of and two meetings were arranged after the Conference was over. In the first, which was presided over by Mr. Sasadhar Banerjee of Bengal, the Secretary of the Association spoke on "*The Work before us*", in which he surveyed the progress of the Association so far, and indicated the lines in which it might develop in the coming years. In the second, presided over by Mr. K. S. Vakil of Bombay, Miss M. W. Barrie of Lady Willingdon Training College, delivered an interesting lecture on "*Regional Survey*", explaining the methods followed by her students in carrying out a survey of the fishermen's hamlet in front of their College.

* * * *

It has been proposed that an Annual Conference of the Association can be held in turn in different centres of the Presidency during the Christmas Holidays along with the Annual Conference of the South Indian Teachers' Union. The idea is quite a good one, and such a conference has several advantages. While co-ordinating the activities of the mofussil branches of the Association, it will serve to bring together several teachers of Geography, who can with great profit read papers, hold discussions and arrange excursions and exhibitions. It is hoped that the idea will translate itself into action during next Christmas at Coimbatore.

* * * *

The proposal to open a Diploma Course in Geography in the University of Madras has not been carried out yet, and the question is still pending with the Senate. Even after it is accepted by that body it is doubtful whether money will be forthcoming in the near future. Meantime, the need for a body of trained teachers of Geography for the College and the High School is becoming ever more urgent. The three Mofussil Colleges and the one City College that had started Geography as an Optional Subject in the Intermediate Course had been forced to close the section for want of the qualified teacher. Quen Mary's College is the only institution that now provides for Geography in the Intermediate Course, which bids fair to become another paper course in this University like the B. Sc. course.

* * * *

If there are insuperable difficulties in the way of the University providing for a Diploma Course to prepare the qualified teacher of Geography, we would strongly urge upon the University authorities to include Geography as one of the B. A. (pass) Degree subjects, leaving it open to particular Colleges to provide for the teaching of the subject. If one men's College and one women's College does so at once, as it is in all likelihood probable, the question of preparing the qualified teachers solves itself. The University can start the Diploma Course when its financial stringency is over.

* * * *

Meanwhile the remodelled S. S. L. C. Course, which has accorded a place to Geography, both as a compulsory and as an optional subject, has created a sudden and large need for the qualified teacher of Geography in the High School. Geography trained L. T.'s are far too few; and most High Schools have been contented with having the subject taught by Secondary Grade Teachers and History L. T's. The latter are in great need of Refresher Courses to put them into touch with the latest ideas and methods; and the Malabar District Board did a great service by arranging for one such for the teachers in the District.

* * * *

The Madras Geographical Association is out for arranging another Summer School in April next; and feeling strongly that there is a general tendency to make the teaching bookish, it is proposed to give training in Practical Geography to a select number of teachers of Geography in High Schools. Details of the course are published at the end of this issue of the Journal: and it is hoped that they will take advantage of the opportunity afforded. The course will necessarily be strenuous and somewhat costly; but it will be worth while undergoing.

* * * *

With this issue the Journal completes its Fourth Volume, while the Association will shortly complete its fourth year of existence. The year has been remarkable for the increasing number of subscribers from among teachers of Geography: and in order to be serviceable to them topics of interest and use to them have been included in every issue of this volume. In the coming year it is hoped that more and more of teachers would enrol themselves as

members and subscribe for the Journal. They would thereby be making it financially possible either to increase the size of the volume or to issue more numbers in the year. We would specially appeal to the non-journal members to subscribe for it from the new year, which commences on 1st April, 1930. We would also point out that the subscription need not be felt burdensome at a particular time, as one of the rules allow payment in instalments of whole rupees at the option of the member. May we request every member to try and procure one new journal member? It will then be easily possible to convert the Quarterly into a Monthly. We trust that the appeal will not go in vain.

It is sickening, to note that the new S. S. L. C. (A-group) syllabus has not even yet been finally approved, though it has been in force in schools from the beginning of the year. By this inordinate delay and consequent uncertainty, the enthusiasm that was evident at first for this new subject in the curriculum has gradually been yielding place to disgust and apathy. Will the Board hasten the matter at least now?

A branch of the Association has been formed at Villupuram; and this is the second. The formation of mofussil branches will help to increase the activities of the Association; and it is hoped that conditions will soon be fulfilled for the opening of new branches in important centres. What is required is a minimum of six members in the locality.

Books and Journals Received.

Pre-Musulman India : Vol. I. *Pre-Historic India* : Prof. V. Rangacharya.

The World : Howarth and Bridewell (Oxford University Press.)

Introduction to World Geography : A. Wilmore (G. Bell and Sons). 3/6d.

Rural India : November and December 1929, and January 1930.

The South Indian Teacher : November and December 1929, and January 1930.

Scientific Indian : September 1929.

The Geographical Journal : November and December 1929, and January 1930.

Educational Review : November and December 1929, and January 1930.

Geography : December 1929, Vol. XV, Part 4, No. 86.

The Mystic Science : July 1929.

The Mysore Secondary Education League Journal : Vol. I, No. 1.

The Indian Educator : December 1929 and January 1930.

Burma Geographical Journal : June and October 1929.

Quarterly Journal of the Mythic Society : January 1930.

Educational Review of New York : January 1930.

Digest of the Operations of the Department of Agriculture, Madras for the Quarter ending 31st September 1929.

Report of the Department of Industries, Madras for the year ending 31st March 1929.

Report of the Operations of the Department of Agriculture, Madras Presidency for the year 1928—29.

Madras Agricultural Department : Bulletin No. 97, Results of Demonstrations of Agricultural Improvements in Madras Circle, carried out in 1924—27 Rao Bahadur D. Ananda Rao.

Madras Agricultural Bulletin No. 98, Pepper Cultivation on the West Coast by M. Govinda Kidavu and P. A. Venkateswaran.

Madras Agricultural Bulletin No. 99, Results of Experiments at Samalkota on Intermediate Season Cropping.

Handbook of the Fifth Conference of the All-India Federation of Teachers.

Financing and Forced Sale of Produce : K. C. Ramakrishnan.

Geological Traverse through South Sinbhum : C. Mahadevan.

The Madras Geographical Association.

Summer School of Geography, April 1930

It is proposed to run under the auspices of the Madras Geographical Association a Summer School of Geography in the Geography Department of the Teachers' College, Saidapet, from Thursday the 10th April to Tuesday the 22nd April, 1930. It is primarily intended to give training in Practical Geography to teachers of Geography in High Schools.

The Summer School undertakes to provide for the teacher who has already had grounding in Geography work the training which would normally require two term's work, in the course of a short period, by means of intensive effort along a concentrated course of studies, judiciously chosen for their value and importance from the point of view of the teacher. The course will consist mainly of practical Work, Field Work and Excursions, and will present the salient points in such essential matters as map-making, map-reading and map-correlations, the study of land forms, climate and weather, use of graphic methods and statistics, and construction of diagrams, models and appliances. A course of training in Elementary Surveying will be given by an Instructor from the Engineering College and a few general lectures, illustrative of geographic method and view-point, will also be delivered.

A committee, consisting of Miss J. M. Gerrard, Miss E. D. Birdseye, Miss H. A. Edington and Mr. N. Subrahmanyam, will conduct the School.

The increasing recognition of Geography as an educational subject, both in the College and the High School, more especially the inclusion of it in the remodelled S. S. L. C. Course both as a compulsory and as an optional subject, have made it incumbent that those who handle the subject shall get up now that amount of practical training, which they have not been able to obtain up till now, and which they will not for some time to come get otherwise. Only so will the teacher be in a position to handle the subject competently in the class and come up to the mark. It is specifically to provide this opportunity that this Association has undertaken to have another Summer School this year.

It is notorious that much of what passes for Geography is only book work, and it is to counteract this tendency and to inculcate the right methods and give training in them that this Summer School is undertaken.

It is expected that Principals, Headmasters and Management will, in the interests of efficiency of Geography teaching in their institutions, provide all the necessary facilities for their Geography teachers to come to Madras and undergo training in the Summer School. The number proposed to be trained is 30.

To cover the cost of stationery, postage, printing, excursions and other incidental charges, a fee of Rs. 10 will be charged for the entire course. This amount should be remitted to the Secretary, after receipt of the intimation of selection, so as to reach him not later than the 25th March, 1930. Those whose fees are not received by that date cannot have their seats guaranteed.

Lodging and Boarding for those that require it will be arranged in the Teachers' College, Saidapet, and the probable expenses will be Rs. 15 for the whole period, payable in advance. Those wishing to stay in the Hostel will remit this amount to the Secretary. Only vegetarian food will be provided. Special arrangements will be made for accommodating lady teachers.

Applications are invited, and the applicants such as are selected will be furnished with other details regarding the course. Applications should be addressed to :—

"The Secretary,

THE MADRAS GEOGRAPHICAL ASSOCIATION

Gopalapuram,

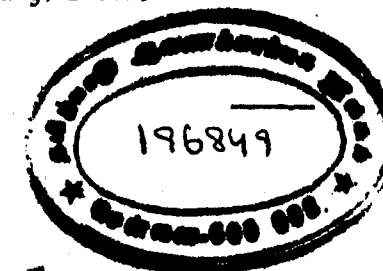
CATHEDRAL POST (MADRAS)."

so as to reach him not later than the 15th March, 1930.

MADRAS,
15th February, 1930.

N. SUBRAHMANYAM,

Secretary.



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THE JOURNAL OF The Madras Geographical Association

The Journal is a Quarterly published every April, July, October and January. It contains mainly original papers read before the Association; but, it will also include articles, notes, reviews, etc., useful for the teacher of Geography.

The annual subscription is Rs. 4 for members (excluding the membership subscription of Rs. 2), and for non-members and institutions Rs. 8.

The Journal is a good medium of advertisement for Geographical publications, apparatuses and appliances.

Advertisement Rates

Full page per insertion	Rs. 10
Half page „ „	„ 6
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All correspondence to be addressed to the Secretary,

The Madras Geographical Association,
Gopalapuram, Cathedral Post, Madras.

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7. A person shall become an ordinary member upon the proposal by a member, the seconding by another member and approval by the council by the majority thereof present at its meeting. He shall pay an annual subscription of rupees *two* payable in one instalment or in two equal half-yearly instalments at his option.

8. Those who pay an amount of hundred rupees in two years become LIFE MEMBERS, and they shall be exempt from payment of any further subscriptions.

Officers.

9. There shall be the following officers for the Association :—

Patrons, Vice-Patrons, President, one or more Vice-Presidents, Secretary and Treasurer.

Management.

10. The management of the Association shall vest in a Working Council, which shall consist of the President, the Vice-Presidents, the Secretary and the Treasurer as *ex-officio* members, and four others elected by the general body, one at least of whom shall be from amongst the mofussil members.

11. The *Quorum* for a meeting of the working council shall be three.

The Powers and Duties of the Working Council.

12. The duties of the Working Council shall be :—

- (A) To receive and approve all applications for membership ;
- (B) To arrange for the annual and other meetings of the Association ;
- (C) To provide for the custody and utilisation of the funds and other property of the Association ;
- (D) To appoint committees and assign duties to them ;
- (E) To act in all respects on behalf of and with the powers of the general body, except when it is actually sitting.

13. The working council shall have the powers, subject to the veto of the general body, to issue, modify or rescind bye-laws, for the regulation of the work and activities of the Association.

Miscellaneous.

14. The official year of the Association shall be from 1st April to 31st March, and shall be divided into two sessions.

15. The Annual Meeting of the Association shall be held in March, when the officers for the coming year shall be elected.

16. All life membership subscriptions, all unspecified donations and one-third of all ordinary subscriptions, shall be carried to the capital fund of the Association.

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS.

THE WORKING COUNCIL

FOR 1929-30.

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All communications and remittances should be addressed to—

The Secretary,

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