WILEY

The English Stations in the Hill Regions of India: Their Value and Importance, with Some Statistics of their Products and Trade

Author(s): Hyde Clarke

Source: *Journal of the Statistical Society of London*, Vol. 44, No. 3 (Sep., 1881), pp. 528-573

Published by: Wiley for the Royal Statistical Society

Stable URL: <http://www.jstor.org/stable/2339060>

Accessed: 27-06-2016 09:05 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at

<http://about.jstor.org/terms>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Royal Statistical Society, Wiley are collaborating with JSTOR to digitize, preserve and extend access to *Journal of the Statistical Society of London*

The ENGLISH STATIONS in the HILL REGIONS of INDIA : their VALUE and IMPORTANCE, with some STATISTICS of their PRODUCTS and TRADE. By HYDE CLARKE, V.P.S.S., formerly Honorary Agent for Darjeeling, and for the Planters of Western India.

[Read before the Statistical Society, 21st June, 1881.]

CONTENTS :

	PAGE		PAGE
I.—Early History of Hill Settlements	528	V.—Statistics : Tea, Cinchona ; Horses, Cattle, Sheep, and Goats ; Wool ; Timber ; Beer	545
II.—Description of Hill Districts and Towns in the Northern or Tea Regions	529	VI.—Trade with High Asia, Afghanistan, Kashmere, Thibet, Nepaul, Bhutan, Naga ; Statistics	554
III.—Description of Hill Districts and Towns in the Southern Coffee and Gold Regions....	539	VII.—Development of Hill Resources ; Aborigines ; Military Establishments ; Economy and Efficiency...	558
IV.—Progress of the Hill Question in India and in Parliament	544		

I.—Early History of Hill Settlements.

To the north of India rise the high walls of the Himalayas and their kindred ranges, forming the bounds of high and central Asia. From this northern line runs on the west a series of mountains through the peninsula of India, constituting its backbone, and lately familiar to us from the gold deposits in the south.

It is with the northern, the Himalayan ranges, we shall now chiefly deal. Within these we have territories which form a contrast to our main Indian empire in the great river-basins, for whereas these latter are hot, unhealthy, and hurtful to English constitutions, in the hills we have cool and cold lands, with our own climates, our own fruits ripening, and children of our own blood thriving.

From the burning plains eager eyes have turned to the snow-clad hills from the early times of English empire, and our statesmen have looked forward with hope to the day when the Himalayan regions should be occupied by our people. It has been the yearning for health and for shelter from the sweltering hot seasons of Bengal, which have most moved these men, but some have thought that military colonies should be there placed, in which our men could be stationed. There are records that Clive, Warren

Hastings, Wellington, Munro, Bentinck, Metcalfe, Ellenborough, Dalhousie, Malcolm, Canning, and the Laurences, amongst others, have favoured the occupation of the hills.*

The first practical step was taken by Lord William Bentinck in 1819, in authorising the establishment of Simla, and from that time the stations have gradually increased in number, the foundation of Darjeeling in 1828 being a marked step in opening a station for Bengal.

These hill-tops in the northern and southern ranges, early sought by the sportsmen, were then camped on by men weary of heat and fever. They were first recognised as sanitarium for the sick English officers and soldiers, and as such they are by many still regarded. Places of rest became places of pleasure, and though workers went up to the hills to labour harder in the healthier atmosphere, yet many of the stations became watering places, and this aspect of their existence has prevented some from more seriously regarding them. The fact too that the wives and children of many were sent up there from the plains for safety did not weaken such impressions.

Their natural advantages with regard to health made themselves felt, and the hills became regular summer resorts of the chief administrators. The jealousy of the presidential cities, although it opposed such a diversion, could not resist it, and Calcutta, Bombay, and Madras had to share the seats of government with Simla, Darjeeling, Ootacamund, and Mahabaleshwar.

The growth of the hill towns went on, but was very slow, for the favour shown to them by statesmen was counteracted by the persistent misrepresentations of the presidency towns. A concurrence of circumstances about a quarter of a century ago gave, however, at length, stability and consistency to the system of hill occupation, although that has by no means received the development of which it is capable, and which has even been recognised as necessary by authority.

II.—*Description of Hill Districts and Towns in the Northern or Tea Regions.*

The following is a list of the chief hill stations, exclusive of Assam, Burmah, and Kangra:—

DARJEELING.		
Jelapahar		Hope Town.
Gnadenburg.		Kursion.
Leebong.		

* Hyde Clarke, English Settlement, "Society of Arts Journal," 19th May, 1858, p. 423.

CHIRRA POONJEE—Shillong.

SIMLA.		
Boileaugunj.		Kussowlee.
Koteghur.		Sanawur.
Juttogh.		Dugshaie.
Soobatloo.		
DEHRAH DHOON.		
Landour.		Woodstock.
Mussoorie.		
ALMORAH.		
Hawnlbagh.		Nynnee Tal.
Bheen Tal.		
MURREE.		
Dalhousie.		Dhurrumsala.
Budarodeen.		Abbotabad.
ABOO—Erinpoora.		
OOTAKAMUND.		
Coonoor.		Kotageri.

There are, however, several districts not in the above list of popular sanitarium. Even Burmah has its healthy hills, in which is Nattoung Station, formed in 1869, 7,000 feet above the sea level, with European climate and productions. Allaumyo was likewise surveyed as a sanitarium for Thyetmyo.

Assam is a district acquired of late years, in which the establishment of the tea cultivation has brought it under European superintendence and influence. In this remote country the Assam Tea Company and many private individuals have founded tea plantations. Many parts of Assam are unhealthy, but there is the choice of healthy sites; many formerly unhealthy have been rendered healthy by clearances for tea planting, and as there is abundance of new land and sufficient cheap labour, new factories are springing up, houses with galvanized iron roofs are raised, and steamboats are run on the Burrampooter. In these villages and tea stations many English residents are to be found, and there is ample scope for enterprise. Besides tea, silk, sugar, rum, lac-dye, timber, and caoutchouc are articles of English trade.

Cachar, one of the divisions of Assam, produces tea of good quality. A company has been formed, called the Cachar Tea Company, and there are a score of other tea plantations. The war alone has stopped the influx of Europeans. The military duties are performed by hill natives, called Kookies.

The Durrung division of Assam has tea establishments, a lac-dye manufactory, and a military church.

In the Gawalparah division of Assam the English have engaged

in the timber trade, and are working the forests of the uplands. Here, as in other parts of Assam, English schools are established.

Kamroop, or Gowhatty, has several English establishments for tea, timber, the manufacture of caoutchouc, lac-dye, and rum. There is a station of the American Baptist Mission. The troops are native, consisting of Assam light infantry, of which there are two regiments.

Throughout the hill stations it will be observed that the natives consist of tribes of distinct origin, and having no sympathy with the people of the plains. Some have been enrolled, and rendered considerable services during the mutiny. Thus they are induced to value the English alliance, and are trained up as good subjects.

Caoutchouc, it will be seen, is in this district a result of English enterprise, as are the products of the forests hitherto unutilised.

The Luckimpore or Debrogurh division of Assam is one of the tea districts, and there are tea gardens at Chubwa, Dikkun, Myjaun, Disraalle, and other places. One of these companies or firms employs three English assistants. There is a church. Cotton is grown by the Nagas.

Nowgong, in Assam, is a tea and sugar district. There is an American Baptist mission station, Assam being one of the districts in which the American Baptist Society co-operates with us for the civilisation of the natives.

Seesaugur is the great tea district of the Assam Company. They have here five tea gardens, and employ many English, including a civil engineer, a surgeon, and an accountant. The American missionaries have, besides chapels and schools, a girls' boarding school, and a printing press, from which is issued a monthly paper in Assamese.

The Golaughaut district of Seesaugur includes tea gardens and sugar works.

Attached to the Assam government or commission is that of Sylhet. The productions of this district include coal, iron, limestone, timber, lac, caoutchouc, wax, honey, betel nuts, oranges, cassia, tea, and cotton. It will be observed that these are chiefly mineral and forest products, affording good scope for the application of capital and enterprise in obtaining the raw products and in preparing them for the market in the first manufactured state.

The Kahssia Hills rise precipitately from the plains of Sylhet (which is in no sense a hill country) on the one side, and after attaining a height of 6,200 feet, slope down by a gradual descent until they are lost, as it were, in the Brahmapootra river, on the other side. Between Sylhet on the River Surmuh or Gowhatty, we may estimate the breadth of the hill tract between 70 and 80

miles. More than fifty years ago the small Hill station of Chirrapoonjee was established on the very edge of the south face of the Kahssia Hills, at an elevation of about 4,000 feet above the level of the sea, and looking down upon Sylhet in the plains below. At very nearly the same epoch, a small hill station, called Nungklow, was formed on the Assam side, and looking down on the plains of Gowhatty and the River Brahmapootra from an elevation of about 5,000 feet.

Nungklow, however, never thrived; access to it was exceedingly difficult, through a most unhealthy tract, and the station itself turned out to be not out of fever range.

The station of Chirrapoonjee succeeded better. The headquarters of a regiment of native infantry was fixed there; the chief civil authority in the Kahssia Hills had also his office there, and it became a mild sort of watering place for the civil functionaries of Eastern Bengal, and even now and again a stray traveller from Calcutta might be found there. But Chirrapoonjee had several disadvantages. It was healthier than Nungklow, but still not quite free from malarious fever, and dysentery would often be very prevalent and dangerous there; then its position was exceedingly confined; it was remote from the best peopled part of the hill region, and its climate is perhaps the wettest in the world. Chirrapoonjee was fast going out of favour, when in the year 1861 the magnificent plateau of Shillong was discovered. Shillong lies about 30 miles north of Chirrapoonjee; it is screened by a high range of hills from the excessive rainfall experienced in Chirrapoonjee, and situate in the very heart of the hills; it is also protected from the malarious emanations of the valley of Assam. An easy carriage road, about 60 miles long, connects it with Gowhatty, the chief port of the Brahmapootra. Shillong has its racecourse and its polo and cricket grounds, and the roads are so level as to allow of the employment of wheeled carriages. The country in its neighbourhood is gently undulating, and has very much the appearance of some parts of the Surrey or Cotswold Hills. Indeed the neighbourhood of Shillong is so practicable, that in several directions a man can ride 10 or 12 miles at a hand gallop without drawing rein. At the same time the landscape is by no means tame: it is well watered and well wooded with beautiful glens, mountain streams, and splendid waterfalls; among the latter, I may mention "The Bishop's Fall," which plunges down a mountain gorge in one unbroken sheet of water to the depth of 410 feet. The soil of Shillong is not very good, but the potato is cultivated there with great success. Shillong has now been selected as the seat of Government for the province of Assam; it is also the headquarters of the military force on the north-east frontier. The climate is

very equable ; during the summer months the thermometer rarely marks above 82 degrees, nor falls in winter much below freezing point ; I believe snow has never been known to fall on the Kahssia Hills. The establishment of Shillong has proved of the greatest value to the tea planters in Assam and Sylhet in a sanitary point of view, and strips the malarious localities in which they have to work of much of their terrors. They build themselves houses at Shillong in which their wives and families reside during the unhealthy season, and to which they can immediately repair when attacked by any illness. In short, Shillong is now to Assam pretty much what some of the mountain cities of South America are to the seaboard.*

Darjeeling is one of the most important places in connection with the English settlement of Bengal. Lying due north of Calcutta, with railway and steamboat communication, a small amount of enterprise will bring it within a few hours' reach of Calcutta. Its advantages were first discovered about the month of February, 1828, by Mr. J. W. Grant, of the Civil Service, at that time resident at Malda, and by Captain, afterwards Major-General G. W. A. Lloyd, who were employed in settling the boundary between Nepal and Sikkim. These gentlemen represented the facts to the Governor General, Lord William Bentinck, in 1829, and that great man, it is said, never lost sight of the expediency of establishing on this tract of the Sikkim hills a station for the benefit of those whose health demanded relief from the heat of the Bengal plains. He directed Major Herbert, Deputy Surveyor General, to explore the site ; and the results having been brought before the Court of Directors, they highly approved of the plan, and extended it with a view of its forming a *depôt* for the temporary reception of English recruits, and even as a permanent station for a European regiment. This undertaking likewise received the fostering care of Lord Auckland during his government, as also of the successive deputy governors of Bengal, and of the Governor General, Lord Canning, as well as his successors.

The situation of Darjeeling is in a spur of the Great Sinchal mountain, which itself rises nearly to a height of 9,000 feet, throwing out several spurs. One of these is Darjeeling, a hog-backed ridge, with a steep descent on its eastern side to the torrent of Rogno, and on the west and south-west declining in more gentle declivities, broken into knolls, and intersected by numerous streamlets, and forming a fine amphitheatre, extending from 2 to 3 miles, and dotted with villas, military establishments, the civil offices, the church, hotels, and other buildings. On other spurs are several

* The description of Shillong I owe to Colonel Hopkinson.

neighbouring villages and hamlets, for Darjeeling has already become a small centre of colonisation. In the neighbourhood, nearer or further off, are Guadenburg, the German mission, Hope Town (an English settlement), Leebong (with gardens of the Leebong Company), Jelapahar, Tagoar (the tea plantations of Captain Masson), and Kursion.

The great attraction of Darjeeling to visitors and tourists, and which brings many, is the noble view of Deodhunga, 29,002 feet high, of Kunchinginga, 28,176 feet high, and some of the highest peaks of the Himalayas, affording perhaps the grandest scenery in the world. Thus in the future of Darjeeling its situation as one of the chief places of resort by the Indian traveller will have great influence.

Darjeeling is a small place according to English notions, and is little more than a village, but is rapidly growing in importance. It has a church, Baptist and Roman Catholic chapels, nunnery, boarding and other schools for boys and girls, public library, masonic lodge, hospital, treasury, jail, hotels, and various shops. It is one of those places to which English children are sent for education, and there they get the rosy cheeks of old England. There are numerous residents for health occupying the villas. The military establishment consists of a hill corps, a body of English invalids, and cantonments are prepared for English infantry.

The industrial importance of Darjeeling is now recognised as the seat of tea and cinchona culture.

The neighbouring district, a part of Sikkim, now belongs to the English, and includes a population of 50,000, available for labouring purposes. The remaining district of Sikkim is dependent on England, and can be likewise occupied for settlement when the necessity arises.

The great value of the Darjeeling and Sikkim territory arises from its lying between Nepaul, Thibet, and Bhootan, on one of the natural routes to Central Asia, commanding the trade on the eastern frontier. The produce and exports from these districts include gold dust, iron, copper, lime, woods, tea, wax, ginger, catechu, cassia, coffee, cotton, hemp, gunny, rice, cardamones, oranges, potatoes, ghee, hides, horns, musk, wool, chowries, blankets, woollen cloths, and many other articles. The statistics of this trade, still undeveloped, are given further on to the latest returns.

As a political position, it commands the countries referred to, and prevents the Nepaulese from seizing Bhootan, which they are anxious to do, and whereby we should have those dangerous neighbours, the Goorkhas, now our allies, spread further along our frontier.

The hill of Parisnath in the Burdwan range, has been pointed

to as suitable for a sanitarium south of the Ganges, but nothing serious has been attempted, nor is the elevation considerable.

Passing from Darjeeling, the range of the sub-Himalayas, containing some fine valleys and country available for settlements, is in the possession of the Nepaulese, and is for the time closed against us. We then come to a group of hill countries, including Kemaon or Almorah, the Dehrah Dhoon, and Simla.

Kemaon or Kumaon includes the districts of Kemaon or Almora, Gurhwal, and Nynsee Tal. This country has attracted attention for its iron mines.

Almora has an English population as well as a native one. Here is a considerable establishment.

Hawulbagh, five miles distant, has however the chief residences, and here are the military cantonments. In the neighbourhood are tea plantations.

Gurhwal has many iron and other mines, but the produce is very small. The forests are under government supervision. At Paronee, in Gurhwal, are tea plantations.

Nynsee Tal, in a romantic situation, by the side of a lake among the hills, is the favourite sanitarium in Kemaon. It has been a city of refuge during the troubles, but last year suffered severely by a landslide.

Bheen Tal is a village with tea plantations. In this district are iron works.

Dehrah or Deyrah Dhoon is a district about the size of an English shire. The town is delightfully situated, and is on a good route for trade. The neighbouring country is fertile, but where uncleared, most unhealthy from rank vegetation. In this district an experiment was made of colonisation by invalid soldiers and Portuguese Hindoos, and as it failed as a matter of course, as all military colonies have, and as the Portuguese of India are sure to fail, it is now set up as a stock argument against English settlement in India. The spread of the tea cultivation alone is answer enough to the Dhoon experiment. The town has a church, American Presbyterian and Roman Catholic church, and a variety of public establishments, among which is a station of the great trigonometrical survey of India. The forests of the Dhoon are of importance, and are under government superintendence.

Landour, near Dehrah, is a sanitary station, regularly frequented by the Meerut officers, and forms a considerable town, with military and civil establishments. There are a church and Roman Catholic chapel.

At the village of Woodstock is a Protestant girls' boarding school.

Mussoorie is so close to Landour, that the towns or villages are

almost connected by the rambling villas ; it has a church, and there are a Roman Catholic chapel and a very well conducted Roman Catholic school, or rather college for boys. A nunnery is another Roman Catholic establishment, with a boarding school attached. It will be observed, in surveying the hill towns, that the Roman Catholic missionary authorities have very skilfully selected them for occupation by churches, nunneries, and boarding schools, and as the cost is paid by the pupils from the plains, these become reproductive establishments. At Mussoorie there is a superior church school for boys, and there is a common girls' school, besides two boarding schools for young ladies. Dancing and music are taught in this remote region. Beer is brewed from native barley at this place, and forms a new and permanent branch of trade, which has been mentioned by Sir Richard Temple with praise.

Kenilworth and Clarkeville are places at Mussoorie.

Simla is at present the most important of the hill stations, and is so far metropolitan, that it has been the frequent residence of governor-generals, lieutenant governors, commanders-in-chief, and high authorities. Like most of these sanatoria, it is perched on a narrow ridge of mountains, with dwellings scattered on every available spot, often of narrow area. It was only in 1819 that the first English dwelling was erected here by Lieutenant Ross, but by 1841 it had become a regular English station, and has since much increased. Sometimes as many as 20,000 persons, native and Europeans, are temporarily assembled when the governor-general takes up his abode in the town. In Simla and the neighbouring hill stations are to be found many residences. Christchurch is a costly edifice, with an organ. There is a Baptist chapel. There are boarding schools for boys and girls, and five district schools of the Church Missionary Society. The local governor, called Deputy Commissioner, is provided with numerous functionaries and establishments. This is one of the few places in India which has a municipality, and the only one which has an English municipality, an institution which it is to be hoped will rapidly extend throughout India. There are an observatory, large dispensary, bank, library, hotels, assembly rooms, type, copper-plate, and lithographic printing house, and many shops.

Boileaugunj is a suburb of Simla, named after a distinguished engineer officer, General Boileau.

Juttogh is the military station near Simla, generally occupied by a Goorkha regiment.

Kotgur is a town 50 miles north of Simla. Here are a church mission, a boys' and girls' school of the Church Missionary Society, a school of industry, and station of the Moravian Missionary Society. In the districts are five boys' schools. The Moravian

Missionaries have chosen this as a temporary residence, in order to penetrate the interior from this point, and establish missions among the Tartars and Mongols. The tea cultivation has been successfully introduced in this district.

Chikrata or Pokra, on the road between Simla and Mussoorie, about 38 miles from the latter, has within a few years become a favourite place. Barracks and an invalid depôt have been built.

As far distant as 166 miles from Simla is Chini, on the Tibetan frontier, which in 1869 was a favourite resort of Lord and Lady Dalhousie.

Kussowlee, in the Simla district, is a sanitary station, having large establishments, but suffering from the want of water, which has to be brought from a mile and a quarter distance. The buildings are distributed around a hill of five miles in circuit. There are a church and Roman catholic chapel. Here is the residence of another commissioner. A brewery has been successfully established here likewise.

Sanawur, near Kussowlee, is the seat of a most interesting establishment, the Lawrence Military Asylum. This was founded by that great man, Sir Henry Lawrence, and is one of the munificent foundations of that noble family. As early as 1856 it contained 200 boys and 200 girls, orphans of English soldiers, who, among other employments, are taught printing, bookbinding, and electro-telegraphy. After the mutiny it was much enlarged, and it is likewise the military normal school for training schoolmasters for the Bengal army.

Dugshaie, in the same region, is a station in the Sirmoor territory, having an Established church, and a Roman Catholic church. In the district a hill regiment is raised. The place is 16 miles from Simla.

Soobathoo, another of these towns, is by some preferred to Simla. The population is chiefly composed of native immigrants and refugees from the hill States. There are a church, American Presbyterian chapel, and a Roman Catholic chapel. It is a sanitarium, and one of the most healthy stations for troops. In the neighbouring valleys and steep mountain sides cultivation is industriously carried on: the produce being rice, maize, wheat, barley, millet, ginger, cotton, opium, tobacco, oil seeds, red pepper, hemp, vegetables, apricots, peaches, walnuts, apples, wild pears, raspberries, strawberries, and melons, being the varied growth of several climates in close neighbourhood.

The great group of what may be called for the purpose the Simla military towns, is among those which afford the smallest resources for agricultural operations or other enterprise, but the

trade consequent on the provision of troops and the gradual development of industry, will hereafter invite many settlers.

We now come to scattered towns of much later establishment, being the military sanitarium more lately formed by the Lawrences and other administrators on the hills adjoining our most western territories in India.

Murree is on a hill between the rivers Indus and Jhelum, in the Punjaub, established in 1851. Here was long the seat of the great governor, Sir James Lawrence, one of the saviours of the empire. It has already a large population, and includes a military dépôt, church, the revenue survey department, and many villas.

Dalhousie is a sanitarium and hill station in Punjaub, in the Chumba hills, 120 miles north-east from Lahore, founded still later for the Sealkote and Lahore divisions, and named in honour of the late distinguished governor-general.

Dhurrumsala is another Punjaub military sanitarium with church and small barracks. Here the tea cultivation has been introduced.

Kyelang is a Moravian missionary station in the same province.

The Kemgra and Kooloo districts are of importance for the quality of their tea and their possible mineral resources, rather than for the extent of their present occupation by English settlers.

Budorodeen, a small military sanitarium, was founded in the Marquis of Dalhousie's government in 1853, and is between Bunnoo and Dera Ismael Khan.

Abbotabad, named after the distinguished James Abbott, is a military station 22 miles north of Hurripore.

Ghizree is a sanitarium newly established by the Bengal Government in Sind, for the Kurrachee brigade of the division of its army occupying that country.

Our next district is Aboo or Mount Aboo, in the territory of Serohee, in Rajapootana, connected with the Arawulli range, and being the only station of the kind in the ranges of Central India, which it is supposed will, on survey, be found to present many suitable sites. It is a new town, and is a post of the agent for the States of Rajapootana, and has a church and many English invalid residents. Here is another foundation of Sir Henry Lawrence, the Aboo Lawrence School for thirty boys and seventy girls of English soldiers. It may not be forgotten that a special appeal was made for the endowment of the Lawrence schools, as a memorial of that eminent man Sir Henry Lawrence and of the family.

Erinpoora is the military station of Aboo.

III.—*Description of Hill Districts and Towns in the Southern Coffee and Gold Regions.*

We now proceed further south, to the Bombay Presidency. Along the shore of that presidency the chain of the Western Ghats rises like a wall parallel to the sea and supports the several table lands of the Dekkan.

Thus the inhabitants of Bombay, by ascending these hills, which the Great Indian Peninsular Railway now facilitates, obtain a refuge during the violent heats. Poona, on that railway, has long been a favourite civil and military station, and in its neighbourhood various establishments have been formed. These however have no industrial value.

Mahabuleshwar is a small town on a fertile range of the Western Ghats, in the Bombay Presidency, but having heavy rains in the monsoons. It was founded by Sir John Malcolm in 1828. It has a church, library, hotel, bazaar, and invalid garrison. Malcolmpeth is a neighbouring village.

The district of the Neilgherries is a southern resort for the Madras and Bombay authorities. Ootacamund is its chief town, and is in the Coimbatore district. It was founded in 1822. It has a church, public gardens, and meteorological observatory. On account of its proximity to the Wynaad and Mysore coffee and gold regions it is acquiring more importance.

Bishopsdown is a place near the town, where there is a cantonment for sick soldiers.

Koonoor is a small station in the Neilgherries, with many English villas, an hotel, and bazaar. The depôt is called Wellington.

Kotageri is a neighbouring sanitarium.

Karty is the seat of a German mission in these hills.

The cinchona, tea, and coffee products of the district are referred to in detail elsewhere.

As already stated, coffee and gold exercise the same influence in the south, as tea and cinchona do in the northern regions. Whatever may be the profitable results of gold operations to the adventurers, they will at all events attract capital to the district, and demand attention in any review.

It appears to the public that the discovery of gold in India is indeed one of the most remarkable events in this age, which has seen so many events materially affecting the destinies of the human race. The rediscovery of gold in California and its discovery in Australia, greatly as they acted on the enterprise of the world, yet as the operations in connection with them took place in countries thinly peopled, they did not have the direct influence which must

result from the development of gold mining amidst populations numbered by hundreds of millions.

The gold of India is traditional, and yet, in our days, gold had become scarce in those regions. In Southern India there can be little doubt that the known sites in the Wynaad and Mysore are only indications of larger formations.

It is difficult in any reasonable compass, to give a fair idea of the extent of the gold regions of India, or to effect this by either historical or topographical treatment. If at the present moment the Wynaad regions concentrate attention on them, they cannot be regarded in any general consideration as entitled to sole notice.

Other districts in ancient times were better known, and there are mineral formations in outlying regions which, on examination, may prove to be productive, and which may give unexpected value to countries now regarded as undeserving of attention.

On this occasion we must direct our notice to Wynaad and the neighbouring lands. These must certainly be considered as an old and recognised gold district, at whatever opinion we may have arrived as to its practical utility. The old workings attest its former and continuous occupation for mining, while the petty operations of the native gold seekers preserve the tradition, rather than prove the extent or importance of the formations.

More than once, in later times, attention has been directed to the possibility of turning these indications to account, and that chiefly in dependence on the historical indications. The earliest historical evidence, however, that we as yet possess is that brought forward by the eminent authority on the archæology of India, Dr. Burnell, quoted by Mr. Eastwick and Mr. Brough Smyth. In his note on the great Temple of Shiva, at Tanjore, he is of opinion that it could only be by gold treasures that the rajahs of Southern India could raise in the eleventh century the great temples to Shiva, and in the twelfth and thirteenth centuries those to Vishnu. Were there nothing else to support it, this conjecture would fall to the ground, because the temples were not really constructed with gold, but with labour, like the pyramids of Egypt, unless labour or food had been imported from without and paid for with gold. Any gold expended within the country would, under most circumstances, remain within it, and be again collected into the treasury.

Dr. Burnell, however, brings direct proof as to the abundance of gold, by his successful decipherment of a remarkable inscription in the Tanjore temple. Dr. Burnell is thus enabled to state that in the eleventh century gold was still the most common precious metal in India, and stupendous quantities of it are mentioned. He, too, considers that this gold was obtained from mines, and that the

Moslem invasions interrupted their workings. This is the opinion which appears best to account for the facts known to us.

Mr. Edward B. Eastwick, with his accustomed power of research in oriental history, has treated of the historical data. He records that, in 1123, Allāhu'd-din took the city of Deogarh and ransacked the citadel, receiving, besides 175 lbs. of pearls, 50 lbs. of diamonds, and 25,000 lbs. of silver, as much as 15,000 lbs. of gold. Although this is supposed to be an exaggeration, there is no reason to deal with it as other than the actual conditions of the treaty made and recorded, though the value of the gold would be some 600,000*l.* sterling. Such a treasure is by no means unexampled in history. Indeed, the accumulation of treasure was as great a political end as was the increase of territory, and each conqueror possessed himself of the accumulated stores of his victims.

Tippoo Sultan possessed great quantities of gold. In Maxwell's "Life of Wellington" it is stated that he was to pay to Lord Cornwallis, under treaty, three crores and thirty lakhs of rupees in gold mohurs, pagodas, and bullion, equal to about 3,300,000*l.* On one occasion, Tippoo sent thirty-eight camel loads of money to Scindiah, to buy him over as an ally.

By the estimate of treasure and property taken at Seringapatam in 1799, it is clear that Tippoo had been able to make fresh accumulations of specie; there were 16,740,350 star pagodas; his throne had at least 30,000*l.* worth of gold in it; besides this, he had paid large sums abroad for war supplies and political purposes.

Whether this gold was obtained from the mines of Southern India is uncertain, though the commissioners in 1833 state, "it is "pretty certain that Tippoo attempted to make them a source of "revenue during his possession of the country," which was included in his dominions. Indeed, all the English inquiries turned on this point of the known existence of the metal.

In 1792 and 1793, a joint commission from Bengal and Bombay was appointed to examine the state and condition of the province of Malabar. The commissioners refer, briefly, to the occurrence of gold in treating of the subject of the royalties claimed by the rajahs, which is stated to be on "all gold ore," and also of "compositions of gold," which were found in the Nilambur district.

In 1793, Mr. Duncan, Governor of Bombay, formed a strong opinion of the value of the mines, and took some steps to ascertain the extent of them. In 1802-03, the auriferous rocks of the Nilambur valley are again mentioned, and in 1813 a work was published by Dr. Whitelow Ainslie, in which an account was given of the localities where gold is found in India. He says, "Gold dust "has been found in the bed of the Godāveri, and in Malabar in the "bed of the river, which passes Nilambur in Irnaad district. It

"has, moreover, been procured in very small quantities in Wynaad, in the Arcot district, and in the sand of Beypore river, near Calicut. Though the sources are evidently numerous from which this valuable metal can be obtained in the Indian peninsula, it would seem, from the little interest they have hitherto excited, that none of them promised to be very productive."

Before the year 1831, Mr. William Sheffield, the principal collector in Malabar, had been buying gold for the government, and on the 10th January, 1831, he sent in a report on the several localities where gold was known to be found, and on the methods of mining employed by the natives. Mr. Sheffield made such an impression, that Lieutenant W. Nicholson, 49th Regiment, N.I., was appointed by the Government to search for gold "in the mountains on the Malabar coast."

It may be mentioned that Lieutenant Balfour, R.A. (now General Sir G. Balfour, F.S.S.), being at Colar in 1835, noticed that his servants washed gold there. Every resident told him of gold. Such facts were of constant observation.

Lieutenant Nicholson carried on a course of explorations in 1831 and 1832, and we are now able to recognise that he showed great ability, and that he achieved a certain success. On the 25th of May, 1833, the Right Honourable the Governor in Council dispensed with the services of Lieutenant Nicholson, and appears to have abandoned all hope.

It was not until 1868 that the matter of gold working was seriously treated, and then by Australians who had settled in Wynaad. In July of that year, Mr. H. S. Sterne, who had six years' experience as a gold digger, applied to the Government for leave to prospect for gold and other metals on government land in the Madras Presidency. Permission being granted, he prospected in various places, but with what success is not known.

Somewhere about the same time, Mr. G. E. Withers began to prospect, and became convinced by inspection that the reefs were auriferous and deserving of attention. Owing to his labour and the enterprise of Mr. T. W. Minchin, of Hamslade, near Devala, machinery was erected for reducing the quartz found in the veins of the Skull Reef and reefs within the area of the company, which was called the Wynaad Prospecting Company.

From this period, applications have been continued until now for permission from the Government to work gold on private estates or on public land. These operations attracted much attention, and culminated in what appeared to be, in 1876, a settled industry of gold working, but the trials proved unsatisfactory, and from one cause or another, great discouragement prevailed.

By this time the Government of India had obtained the services

of Mr. R. Brough Smyth, then in the employment of the Government of Victoria.

Some very good descriptions of the Wynaad and the Mysore districts have been published in the memoirs accompanying the Geological Survey of India, particularly the report and map of Mr. King, in May, 1875. That of Mr. Ball is also of geological value. Mr. Brough Smyth, in his report, has entered into valuable local details. Mr. Oliver Pegler has given a general mineralogical sketch of much interest, which he has confirmed by subsequent explorations.

A map of the gold regions, by Mr. James Wyld, the geographer to the Queen, is the best record we have as yet of the general conditions and the various discoveries.

Mr. Oliver Pegler says that the range of mountains of the Wynaad is of ancient formation, belonging to the paleozoic period, more especially to that of the Silurian formation, a matter of much interest. The highest peaks, as in the neighbourhood of Ootacamund, are formed of hard, dense, and crystalline rocks of the metamorphic series of granites, syenites, &c. The more fissile varieties are also here present, and being softer, have yielded to the disintegration and denudation of time, and have formed the valleys and dells adjacent to the peaks.

These softer rocks are of a much higher colour than the harder granite and crystalline formations, and give a red and brown appearance to many portions of the surface of the country. The average height ranges from 7,400 to 8,400 feet, and the whole of the formations are impregnated with black magnetic oxide of iron, which after a shower of rain appears as black sand on surfaces where the water has run over in streams. This is particularly noticeable along the road sides.

The crystalline rocks continue for a considerable distance down the slopes towards the Wynaad country, becoming lighter in colour, coarser in texture, but more laminated and fissile in structure, changing into the gneissic and more laminated varieties of metamorphic rocks.

The whole surface of the ground, writes Mr. Pegler, is contorted, upheaved, and thrown about, forming upright ridges, valleys, peaks, rounded hills, and depressed surfaces. It is most difficult to determine the true strike of the strata generally. The whole country is ramified with a run of gold quartz veins, which are true reefs. The general run of these reefs is parallel, the direction of strike, according to Mr. Pegler, being almost generally, in the Wynaad, north and south, a few degrees west of north, and east of south, but the exceptions are important.

The dip of the reefs is very low, as seen at surface, and most

generally to the east, varying, when cropping out on the brow of the hills, especially when heavily developed, from almost horizontality to from 20° to 39° , and increasing in dip in lower grounds. These reefs, which are met with in every part of the country, are often of great breadth, up to 15 feet, 20 feet, and 30 feet of thickness; are composed of white crystalline, compact quartz, identical in every respect with the reef quartz of Russia, Australia, California, Nevada, or any other known gold bearing country.

The Indian mines however vary much from each other. Some are rich pyrites, others cold white quartz, others again are dark in colour. The circumjacent rocks, it is to be noted, are also auriferous.

Accessibility may be regarded in connection with the other conditions. Within 4 miles of some of the Mysore mines, is a railway station in union with the main Indian system.*

IV.—*Progress of the Hill Question in India and in Parliament.*

My own attention was directed to the hill question specially, as far back as 1849, when I took part with Mr. Francis Whishaw† in reporting to the Honourable East India Company on the telegraph system for India. All plans had naturally taken Calcutta as the essential centre of the telegraph chain; but it appeared to me that Simla could as well be constituted one of the centres, and thus India would be in communication with the Governor-General, whether at Calcutta or Simla. I also saw the importance of Darjeeling. By providing for connection with the hill stations, at a comparatively small expense of a few thousand pounds, the result really was to remove them from the class of temporary summer camps to that of stations of regular occupation, and it became impossible to affirm that communications could not be made with or from the Governor-General and the Governors in the hills.

It was evident to me, from my long acquaintance with the Indian railway system, that the hill stations could only be developed by being connected as well with the railway system as with the telegraph system. Sir Macdonald Stephenson had proposed a Northern Bengal railway as one of the great feeders of the East Indian Railway, and in 1857 I became associated with him in the extension of a line by that route to Darjeeling, and I also took up the question of branch railways to Simla and other hills.‡

Thus thrown into direct relations with the hill regions, it

* For the Pulneys and Southern Hill capabilities, I refer to the observations in the discussion of Sir W. Rose Robinson.

† "Indian Colonisation," by Hyde Clarke, p. 5.

‡ In 1857 I published "Colonisation, Defence, and Railways in our Indian Empire," (London: Weale.)

appeared to me that the railway question could best be promoted by bringing before parliament and the public in England and India the whole hill question, which before that had been confined to India and to the despatches, memoranda, and pamphlets of individuals, producing no concerted action, unhappily remote from inspection. Then, as now, the question was released from the narrow trammels of purely Indian considerations, and treated in relation to its bearing upon England as well as India.

By using the terms "colonisation" and "settlement," I threw down the gauntlet and provoked a host of opponents, and thereby created a discussion, in which the home and Indian press took part. In 1858, through the exertions of the late William Ewart, M.P., I obtained a committee of the House of Commons, which sat in two sessions, and published valuable reports, which remain of authority to this day. From that time a public opinion has existed which has contributed to the general progress of the policy.

The most effective branch of this progress has been the successful establishment of tea cultivation, afterwards of cinchona cultivation. Thus there is no doubt now that there are industrial capabilities in the hills, and the development of these capabilities will slowly promote the advance of these regions, irrespective of government patronage on which it appeared solely to depend.

Thus on a subject which is still unfamiliar, we are in a position to consider practical results, and thereby to arrive at a determination as to the future with greater confidence, and this is what is now offered for the attention of the Statistical Society. It is because the subject is of importance and deserving of inquiry, and because the statistics are not well defined, that it appeared to me proper to bring it before the Society. One branch of our labour is to deal with figures, when furnished in abundance, and from them to deduce results. From positive facts we are able to arrive at positive conclusions. This, however, is not the final purpose in statistics any more than in any other branch of science. We, too, have the opportunity of research in the examination of what has remained unexplored, and in showing how from the uncertain, the certain is to be reached, by labour and by care. When a want has been determined and recognised, then comes the demand for supplying it by the application of public or individual exertion.

V.—*Statistics : Tea, Cinchona ; Horses, Cattle, Sheep, and Goats ; Wool ; Timber ; Beer.*

The statistics for our purpose have to be picked out from the public records of India, and as these have not been directed to our special end, they are scanty and imperfect. They serve to illustrate

but dimly the main facts, but the statement of the case may stimulate other inquirers to pursue more successfully the investigation. If there are healthy regions within our empire in which English industry can be applied, and to which our own people can repair, then the time of the Society can fairly be devoted to the consideration. It is not, however, narrowed to such points, for there are connected with it questions of our trade with Central Asia, Thibet, and China; of the defence of our frontier, and the protection of the internal peace of our Indian empire, all of which can be promoted by the due development of our interests in the hill regions.

Looking at this practical point of view, the tea cultivation is convenient to take as that most familiar to us. The great extension of tea cultivation in Assam is well known; that in the hills is less so; but it is yearly attracting more attention. One of the most remarkable circumstances in that great and praiseworthy undertaking of the introduction into India of the cultivation and manufacture of tea was the discovery that the tea-tree was already growing in our territories; and the subsequent knowledge, not only that Chinese tea was produced in India of superior quality, but that the Indian tea grown from the Indian plant, having more remarkable properties in the end has obtained for itself a distinct rank in our market.

With Assam we are not now concerned, but with the higher hills. At Darjeeling and other stations were to be found English residents who could supply capital and intelligence, and having sufficient superintendents on the spot, and some native labour. The late Dr. Archibald Campbell, to whom the hill stations in general, and Darjeeling in particular, of which he was long Superintendent, owe so deep a debt of gratitude, bestowed his energy on the tea experiments, and on his return home gave it undiminished care.*

Thus Darjeeling has become a respectable tea centre, and Kangra, Kumaon, and many other districts are names as familiar in London as Chinese names for qualities of tea have long been.

The following gives a recent view, which I have drawn from authentic sources, of the condition of the tea industry:—

* See his papers and discussions on tea; on trade with the interior; on cotton; on tussah; in our Indian Section of the Society of Arts.

Tea.

[Founded on "Miscellaneous Statistics, Calcutta, 1880," p. 2.]

	Number of Plantations.			
	1875-76.	1876-77.	1877-78.	1878.
Darjeeling	124	144	163	173
Kumaon and Gurhwal	14	23	—	—
Dehra Dhoon	13	16	—	—
Simla	1	1	1	1
Kangra, including } natives.....	850	910	1,041	1,173
Neilgherrys	38	44	53	69
	Acres under Tea.			
Darjeeling	22,450	25,846	29,405	29,911
Kumaon and Gurhwal	2,224	2,235	2,300	—
Dehra Dhoon	2,139	2,474	3,080	3,372
Simla	120	120	100	100
Kangra	4,126	4,611	6,661	7,751
Neilgherrys.....	2,392	3,142	3,269	4,191
Total Hills	33,451	38,428	44,815	47,700 ?
Total Assam	87,307	102,711	140,146	147,840
	Yield in lbs.			
Darjeeling	4,616,358	4,211,142	5,284,049	7,725,206
Kumaon and Gurhwal	283,070	265,951	333,747	—
Dehra Dhoon	348,112	433,212	578,373	728,097
Simla	8,170	7,484	3,000	3,000
Kangra	671,779	723,088	855,420	691,588
Neilgherrys.....	220,070	235,769	226,389	615,406
Total Hills	6,147,559	5,876,646	7,280,978	9,810,000?
Total Assam	20,028,890	23,493,099	28,352,298	28,509,548

The hill stations have great advantages for sending down their teas to stations on the plains; and though the Indian tea trade may be subjected to great vicissitudes, it can scarcely fail to be a permanent hill occupation. If the large companies should not succeed, tea gardens will still be maintained by local enterprise.

The value of Indian tea exported to the interior was:—1878-79, 43,000*l.*; 1879-80, 16,000*l.* The quantities were:—1878-79, 582,000 lbs.; 1879-80, 284,000 lbs. The export was chiefly to Afghanistan.

The capital invested in Indian tea cultivation in Assam and the Hills, is estimated at nearly 15 millions sterling, but this most pro-

bably includes the prices paid for the properties, and really represents the interest at stake.

The tea export trade, otherwise than to England, is likewise an important consideration :—

	America.	Australia.	Continent.
	lbs.	lbs.	lbs.
1874-75	17,200,000	13,700,000	6,400,000
'75-76	13,200,000	16,800,000	10,100,000
'76-77	13,300,000	16,800,000	6,000,000
'77-78	19,000,000	16,200,000	Nil
'78-79	12,500,000	17,300,000	1,100,000
'79-80	19,700,000	18,600,000	2,800,000
'80-81	24,000,000	24,700,000	6,700,000

The American and Australian trade is growing, but competition is threatened from tea growing in the United States and New Zealand.

The visit to Darjeeling and the Himalayas of Sir W. J. Hooker has borne good fruits for those regions, as from Kew Gardens he has been able to promote the encouragement of new products in India. Of these cinchona, chiefly through the introduction of Dr. T. Anderson, has well succeeded in Darjeeling. Ipecacuanha, to which much attention has been directed, as a drug of primary necessity for India, has not as yet achieved the same success. Cinchona has proved a benefit to India, and a success for the hills. As yet it is still largely cultivated under the direction of Government, but private enterprise is becoming more largely engaged.

It will be of interest to the Society to observe how far Government aid has been successfully applied in the introduction of new industries, which have afterwards been left to private enterprise, and many have become self-supporting.

There can be no doubt that tea and cinchona will promote the application of enterprise to other products, for the hills have the advantage not only of moderate, of moist, and of cold climates, but of a great range reaching down to the hot jungles at their feet.

Cinchona Cultivation. Darjeeling and Sikkim Plantations.

[Founded on "Miscellaneous Statistics, Calcutta, 1880," p. 21.]

1874-75	39,046 lbs.
'75-76	211,931 "
'76-77	207,781 "
'77-78	344,225 "
'78-79	261,659 "

Neilgherry Plantations.

1874-75	57,250 lbs.
'75-76	65,170 "
'76-77	103,341 "
'77-78	138,818 "
'78-79	114,320 "

The total produce of the Darjeeling plantations appears to be:—

1879.	lbs.
Government plantations	261,659
Private „	120,000
	<hr/> 381,659
	Acres.
Government plantations	2,174
Private „	1,800
	<hr/> 3,974

The Neilgherrys have successfully engaged in coffee growing, and produce 3,500,000 lbs. yearly.

The foregoing are results obtained from a few products, but the forest, animal, vegetable, and mineral resources of the hills are great when attention is given to them.

In the jungle belt of the Terai at the foot of the hills is rich land, of which the Darjeeling portion is being reclaimed, and which will yield cotton and any tropical products. The enterprise of the hillmen is not indeed to be confined to their scanty soil, but can be applied to the wide breadth of land below them.

Sir Richard Temple very properly directs attention to the hides of the hills and to tanning, he might have added skin-dressing and food. These are trades particularly suited to Englishmen, and for which there is abundant variety of materials, as well in what is obtained from the interior as in what is to be found in the forests, and might be derived at a future time from the hills, as attention is devoted to these departments of raw material and of production.

Materials for tanning and dyeing are available in many a hill valley, and the Government could usefully direct encouragement to the production of harness and artillery leather in the hills, as they have of late to the promotion of leather manufacturing in the plains.

The total land imports of drysaltery were:—in 1878-79 and 1879-80, dyes, 72,000*l.* and 78,000*l.*; gums, 64,000*l.* and 113,000*l.*

There are also many branches of the hair trade that can be practised with promise, and feathers also can be utilised.

The breeding of cattle, and the manufacture of dairy produce suitable for distant conveyance, are further occupations particularly suitable to our people. From various circumstances the supply of milk products in the plains is restricted, and there would be markets among Englishmen and natives for all that could be obtained from the hills. The establishment of factories for compressed milk, like the Swiss milk, is deserving of notice. Naturally, cheese of cows, goats, and sheep, clotted cream (the kaimak of the Turks), butter,

and many other articles are worthy of notice. As railways and tramways descend from the hills so will preparation be made for refrigeration.

My object is mainly to show that there are pursuits available for our countrymen, or in which they can improve the native methods.

The imports of horses, cattle, &c., from the hill States may be thus represented :—

Number of	1877-78.	1878-79.
<i>Horses Imported—</i>		
Kashmere	47	152
Ladakh	360	155
Thibet	155	168
Nepaul	71	480
Bhutan	—	1,000
<i>Cattle—</i>		
Kashmere	704	854
Ladakh	—	3
Thibet	6	47
Nepaul	—	4,100
Sikkim	—	763
Bhutan	—	570
<i>Sheep and Goats—</i>		
Kashmere	13,233	15,484
Ladakh	1,934	241
Thibet	2,600	3,800
Nepaul	—	26,000
Sikkim	—	349
Bhutan	—	820

The total value of animals imported by land into India was as follows :—1878-79, 5,12,000*l.*; 1879-80, 373,000*l.*

Wool is much neglected, but sheep and goat's wool, shawl wool, and mohair (tiftik) can be raised. Kashmere is the well-known seat of the shawl manufacture. As Sir Richard Temple says, when detailing the resources of India, the wool trade ought to be in the hands of the English.

	1877-78.	1878-79.
<i>Wool Imported—</i>		
Kashmere	£ 1,800	£ 1,200
Thibet	65,000	121,000
Ladakh	500	2,900
Nepaul	—	650

The total land importations for India of wool were :—1878-79, 273,000*l.*; 1879-80, 228,000*l.*

The hills when once under adequate care, will have many facilities for carrying on various industrial operations. Many

materials they possess of very fine quality, and the water power is abundant. Carpets and shawls are as it were material manufactures.

	1878-79.	1879-80.
	£	£
Blankets, carpets, &c.	48,000	50,000
Shawls	181,000	86,000

With regard to the hill timber trade, it has natural capabilities, and there are many kinds of forest products to be turned to good account.

The following are particulars from the returns of timber imported into India:—

	1877-78.	1878-79.	1879-80.
<i>Timber Imported—</i>	£	£	£
Kashmere	123,848	105,733	110,000
Nepaul	—	79,000	143,000
Thibet	—	40	—

When we consider how deficient many parts of India are in timber, the present supply can only be considered an earnest of what is demanded. Much fuel is sent down, but no manufactures exist of sawn timber, furniture, joinery or turnery. The bad means of transport comes in here to discourage improvement.

While complaints are made of the denudation of the forests of India, there are many parts of the hills suitable for nothing else but tree growing.

There would doubtless be some sale for the fruits and preserves of temperate climates, many of which can be produced of finer flavour in the hills. The imports of fruits into India from Beloochistan and Afghanistan amount to 14,000*l.*, and the total imports of fruits and nuts into India by land, are from 140,000*l.* to 150,000*l.* yearly.

A noteworthy example of what may be done in the milder hills is the successful introduction of French grapes in Kashmere. The Neilgherrys are particularly favourable for the grape. Whenever wine growing receives attention there will be many qualities of wine produced on suitable sites. There is no more reason for this not being done in India than in Australia, while in India there are many advantages in climate and grape soils. The total import of provisions was:—1878-79, 194,000*l.*; 1879-80, 234,000*l.*

Honey and wax are always great forest products, and, as we know at home, can be improved in quality. It is one thing to take honey from a tree in a forest, and another to obtain it from selected

bees in hives. At this moment the Italians are carrying on a notable trade in the supply of queen bees to many parts of the world for the improvement of bee farming.

In the hills there is, according to Mr. P. L. Simmonds, a favourable opportunity ("Journal of the Society of Arts") for carrying on silkworm grain growing, silk production from silkworms and moths, and silk winding.

One of the first industrial enterprises in the hills was the establishment of breweries, and these have taken a steady extension.

The Government return is as follows:—

	Gallons.	
	1877.	1878.
Mussourie (established 1850)*.....	883,000	193,000
Mynee Thal (established 1876)	108,000	108,001
Murree (established 1860)	714,000	751,000
Simla (" '69)	336,000	339,000
Solon (" '77)	41,000	58,000
Ootacamund, &c. (established 1851)	29,000	28,000

* Government contract.

As to mineral working, the resources of the hills are turned to small account. Coal, iron, copper, and lead are found in the Himalayan and sub-Himalayan regions.

In southern India are found ancient gold workings, which are now attracting so much attention, and which are already referred to.

A very good paper on the mineral resources of India, was read before the Indian section of the Society of Arts† by Mr. W. T. Blanford, deputy superintendent of the geological survey of India.

Of copper he says there are several mines in various parts of the Himalayas, especially in Kumaon, Gurhwal, Nepaul, and Sikkim. These are all worked by natives on a very small scale, and the production is so inconsiderable, that even in Kumaon, where the number of mines is large, and many of them are said to be extensive, English copper is imported to supply part of the local demand. An attempt was made in 1839, at Pokri, to work one of the mines by English methods, but it was unsuccessful.

Of lead, galena, the most common ore, is found in Kooloo, Gurhwal, and Sirmoor in the north-western Himalayas, and in the former countries there are said to be rich veins of the mineral, but they have hitherto been little mined.

† "Society of Arts Journal," 11th April, 1873, p. 386.

Silver is said to be found associated with lead in Kooloo.

Antimony is found in Kooloo and Lahoul.

In the Himalayas are also alum shales.

In Kumaon and Sikkim graphite or black lead is found.

The iron of Kumaon has been successfully worked, so far as the production of a fine charcoal iron is concerned; but it has not yet attained the proportions of a large or settled manufacture.

There can be little doubt that iron making must have existed in the Indian hills from the remotest epoch, and while the attention of archaeologists has been directed to bronze, it has appeared to me that the early claims of iron are neglected. In many parts of the world the hills and valleys are occupied, as tradition tells us they were in the past, by tribes of ironworkers in a low condition, some of those of this day being gipsies of Indian origin, as many of their predecessors may have been. This process of working is of rude character, with very small furnaces, but turning out good metal. The hill workers seem to me to be the progenitors of those of the plains.

In 1837 Mr. Sowerby was sent by the Indian Government to report on the iron formations of Kumaon, and his report was so promising that he was authorised to set up ironworks. At the same time some blast furnaces were set up in that country by private individuals, but no success attended any of the attempts.

Afterwards ironworking was resumed, and an iron company was formed in Kumaon. From Thibet about 1,500 tons of salt were imported, and also 1,000 tons of borax.

In joint stock banks for the hills considerable capital has been raised for the formation of independent establishments. There are besides branches and agencies of the banks in the plains. Enough has been done to show that enterprise is growing, and that there is already a small field for the investment of capital. This field can, however, be greatly extended, and in the Neilgherries in particular there is a want of banking accommodation.

With regard to the general development of tea and coffee culture, the "Statist" of 30th April, 1881, p. 477, gives the following figures of export from India for 1879-80:—

	Quantity.	Value.
Tea lbs.	38,175,000	£ 3,051,000
Coffee cwts.	359,000	1,627,000
	—	4,678,000

The exports from India for the last ten months, ending 31st January, 1881, showing a large increase, are :—

	1880-81.
Tea, lbs.	42,347,398
Coffee, cwts.	269,445

VI.—*Trade with High Asia, Afghanistan, Kashmere, Thibet, Nepaul, Bhutan, Naga; Statistics.*

One feature of our position in India is little regarded, and that is the closure against us of our northern frontier, through which we can barely penetrate. China is closed and Thibet, and wherever Russian power penetrates the markets become prohibitory for our goods. Nepaul is closed along a frontier of many hundred miles. Kashmere is left in the hands of a tributary of ours, who has excluded us and oppresses the population we delivered over to him. To Kashmere a remedy can be applied, and the sooner the better. In that country a large English population could be placed, and the interior trade be promoted.

To reopen the channels of trade with central Asia the efforts of our governors and administrators have been long and slowly directed. In all that relates to this important subject, the services of that patriotic statesman and great scholar Brian Hodgson, so long our envoy to Nepaul, must be commemorated. Roads and fairs have been opened and emissaries have been sent to explore. At home the constant care of Mr. Andrew Cassels, as member of the council of India, has been directed to the promotion of this department of our commerce.

That this trade has some capabilities, the following figures, based on "Account No. 4 of 1878-79, Government of India, "Finance and Commerce," will show :—

	1878.	1879.
<i>Hill Imports—</i>	£	£
Kashmere	522,451	558,588
Ladakh	15,240	17,100
Thibet	96,000	150,000
Nepaul	385,982	1,103,841
Sikkim	—	12,622
Bhutan	—	16,451
Naga Hills	—	6,600
<i>Exports to Hills—</i>		
Kashmere	350,500	357,000
Ladakh	8,400	8,600
Thibet	13,900	14,500
Nepaul	170,000	797,000
Sikkim	—	5,500
Bhutan	—	11,000
Naga Hills, &c.	—	4,100

The foreign hill imports into India may be reckoned at 2 millions a-year, and the present productions of our own hills, valueless but a short time ago, approach a million in value.

A recent return, which is in the Society's library, is "No. 1 of "1880, Accounts Relating to the Trade by Land of British India "for the Three Months, April to June, 1880 (Calcutta)." It does not, however, give details during those months of any moment to our inquiries.

The most recent and most copious information on the whole subject is, however, a valuable statistical document by Mr. Stephen Jacob, C.S., assistant secretary to the Government of India in the Department of Finance and Commerce. It is entitled "Review of "the External Land Trade of British India for 1879-80 (Calcutta, "1881)."

This document is, however, too wide in its geographical limits for our special treatment. Thus it includes the trade of one of our most rising provinces—English Burmah—which supplies a large portion of the total. It may be noted that a valuable paper on Burmah, showing its remarkable progress, was read last month in the Colonial Section J, founded at the Society of Arts, and of which a full report is to be found in the journal of that society.

It will not be without interest to true statisticians to peruse what Mr. Jacob says as to the difficulties of obtaining true particulars from the native traders as to the quantities and value of the goods they bring to and fro. Although he states that more willingness has been shown to afford information, he places no absolute reliance on the present or on the comparative figures. It is in fact in the discussion of the true value of figures that the value of much of the real work of our Society consists, and not in the simple supply or manipulation of such figures. Indeed, the numerical method instead of being a safe instrument of science, becomes as fallible as other standards when left untested. It is indeed with such reservations as those suggested by Mr. Jacob, that I have in this paper endeavoured to give an approximate estimate of that portion of the subject which I have presented for the especial consideration of the Society.

It is well to give a brief abstract of the total land trade of India, which after all mainly passes over the mountain boundaries. Throughout this paper the rupee is conventionally reduced at ten to the pound:—

	1877-78.	1878-79.	1879-80.
<i>Imports—</i>	£	£	£
Goods	3,560,000	4,535,000	4,078,000
Treasure	281,000	396,000	518,000
Imports.....	3,842,000	4,931,000	4,597,000
<i>Exports—</i>			
Goods	3,162,000	3,669,000	3,973,000
Treasure	188,000	302,000	277,000
Exports	3,350,000	3,971,000	4,293,000
Total movement of imports and exports.....	7,193,000	8,703,000	8,870,000

Mr. Jacob observes that the treasure returns are quite untrustworthy, except so far as they relate to the Irrawaddy flotilla. He also observes that the apparent fluctuations in different items are the outcome of different items in the trade of the wide area embraced.

What I can most usefully take from Mr. Jacob's review is a calculation of the imports and exports to each country, exclusive of treasure, as in my table previously given :—

Countries.	1877-78.	1878-79.	1879-80.
<i>Imports—</i>	£	£	£
Kashmere	522,000	858,000	409,000
Ladakh	15,000	17,000	17,000
Thibet	96,000	153,000	71,000
Nepaul	385,000	1,235,000	1,397,000
Sikkim.....	—	12,000	23,000
Bhutan	—	15,000	36,000
Naga and Mishmi	—	6,000	7,000
Munnipore	—	5,000	1,500
Hill Tipperah.....	—	12,000	17,000
Looshai	—	5,000	10,000
Towang	—	34,000	6,000
Duffla Hills	—	—	1,000
<i>Exports—</i>			
Kashmere	354,000	251,000	282,000
Ladakh	8,000	9,000	15,000
Thibet	14,000	5,000	20,000
Nepaul	169,000	805,000	859,000
Sikkim.....	—	6,000	5,000
Bhutan	—	11,000	30,000
Naga and Mishmi	—	4,000	3,500
Munnipore	—	4,000	2,000
Hill Tipperah.....	—	1,000	2,000
Looshai	—	1,700	3,500
Towang	—	—	100
Duffla Hills	—	6,000	3,000

It will be seen that the figures of Mr. Jacob do not differ materially from mine. As the figures refer to countries geographically separate, no general result can be given, and the fluctuations in each case must be individually explained. Some of the differences between imports and exports, evidently arise from operations of bullion and treasure.

The great importance of the trade with Kashmere and Nepaul clearly comes out and Thibet is of sufficient importance to justify the efforts being made in that direction for the advancement of our commerce.

Among other advantages now possessed by the western hills, must be reckoned the opening of the port of Kurrachee, by which quicker access is obtained to the home markets. This is due to the persistent efforts of Mr. W. P. Andrew, who has also taken great interest in hill progress.

Sir T. Douglas Forsyth has justly dwelt on the importance of Kurrachee in this respect, in his paper on the progress of trade with Central Asia, read before the Indian section of the Society of Arts.* He found, though he could not obtain materials to make out the details, the following figures as to Kurrachee:—

	Imports.	Exports.
	£	£
1855-56	629,813	604,460
'59-60	1,712,751	947,938
'73-74	1,461,765	3,507,684

The hill trade is considered greatly to affect these figures of increased exports.

Sir D. Forsyth gives the following:—

	Imports into India.	Exports from India.	Total.
	£	£	£
<i>From Afghanistan and countries beyond—</i>			
By Tartar and Abkhana Passes	516,513	120,643	277,157
„ Chawalers and Colera „	130,000	164,000	294,000
„ Bolan Pass	31,870	18,892	50,762
Jamoo and Kashmere	199,950	184,900	384,850
Ladakh and Yarkand	9,170	14,434	23,604
Totals	527,593	502,869	1,030,372

The year of this return Sir Douglas does not cite, and it is only brought in here to illustrate the distribution of the trade.

So also as to exports brought down to Kurrachee, chiefly through the Belooch and Afghan mountains:—

* “Journal of the Society of Arts,” 9th March, 1877, p. 329.

	£
Madder	12,000
Assafœtida	2,000
Raw silk	18,000
Sheep's wool	315,000
Horses.....	92,000
Fruit	15,000

Writing in the "Times," on the 2nd of April of this year, about Candahar, Mr. W. P. Andrew, with regard to the trade of Afghanistan, says that Sir R. Davis, when secretary of the Punjab Government in 1874, estimated the trade at about 600,000*l.* per annum. Colonel Graham, Commissioner of the Derajab, reckoned the trade by the Gomal Pass at 500,000*l.* per annum. At the Geographical Society last year, Sir W. Merewether, Commissioner of Scinde, stated the value of the trade in one article alone, wool, in one year at 600,000*l.*

In a like way as gold enterprise extends in southern India, it is to be expected Bepore, Calicut, and other parts will tend to increase, particularly when they are adequately provided with railway communication.

VII.—*Development of Hill Resources; Aborigines; Military Establishments; Economy and Efficiency.*

It is greatly to be regretted that railway extension in India makes such small progress, for the example of the United States is sufficient to show us the value of improved transport in the development of the country. In India railways would be attended with an advance and equalisation of prices which would improve the condition of the whole community. With the present low artificial prices the people cannot consume our commodities.

As to the hills, railway communication has been neglected. After great agitation a railway has been got within 50 miles of Darjeeling, whereas an Englishman ought to be able to get from Calcutta to his own climate in the hills within a few hours. The subject has been so little considered that it is not embraced in the valuable reports of Mr. Juland Danvers. The continuation to Darjeeling is now being undertaken by an independent company, and is expected to be partially opened this year. It is on a 2-foot gage, and will cost 140,000*l.*

The "Times" (of the 11th July, 1881) stated that the last link of the Darjeeling Steam Tramway was opened on the 4th, so that Calcutta is now in direct communication with its sanatorium. Sir Arthur Eden congratulated Darjeeling on being the first Himalayan station to connect itself with the railway system, and described the line as one of the most remarkable railways in the world.

When the real value of connection with the hills is understood, and its bearing on the prosperity of India, it is to be hoped that adequate provision will be made.

The value of the hill towns, small as they then were, was shown during the mutiny. They became places of refuge for many fleeing from the plains, and for the wives and children of those fighting in the field. In time too they were able to take a small share in the restoration of order.

Had they been organised in the way pointed out by me they would have exerted a more material influence. In consequence of the agitation that we carried on it was at one time determined that one-fifth of the English troops should be put in hill cantonments, but under the extraordinary system of finance that prevailed in India, by which capital had been mixed up with revenue and the due bounds of each confused, the cantonments have not been provided. One good, however, has attended the agitation, that better barracks have been built in the lower stations, and thereby the health and efficiency of our soldiers have improved.

Until the hills are the seat of the chief military stations we shall not reap the full benefit of reform. Then we shall have the men and their wives and children in good condition, and as a collateral advantage the presence of such large temporary populations will promote the growth of great permanent settlements. Veterans will remain in the hills, orphans and other children who have been born or brought up there, will make these towns the places of their abode. The development of hill resources, of the trade and manufactures, will give independent strength to the towns, and favour the constitution of a hardy English aboriginal population.

The permanent residents would constitute the cheap reserve of our military force, and would render equally difficult the invasion of India from without, and the successful prosecution of revolt within.

What the population of the Hill settlements is will not be known until the publication of the results of the present Indian census of 1881. That it is assuming a practical character may well be judged by the case of Darjeeling, of which some particulars have just appeared.

The population of Darjeeling was in—

1872	94,712
'81	157,038
Increase	62,326

To this extent it has grown from the number of a few savages on a hill. This great proportional increase—the largest in Bengal—is justly attributed to the extension of tea cultivation.

In the late plans of army reform the hills have not been forgotten, but it has not been seen that in time the hill tribes will give us the means of greatly reducing the cost of the English force in India. This force is the essential element of peace among the discordant elements of Indian population, and the cost of its maintenance is enhanced by the unhealthiness and discomfort attendant on the unfavourable climate. In the hills, however, there is no need why the cost of maintenance should be more than at home. Thus extra charges would only be required for that portion of the force which is in the unhealthy cantonments.

There is not a greater but a less price to be paid for vast advantages. To the force in the unhealthy stations the great resource would be afforded of a change of quarters to the hills, and the evils of long service in India would be thereby remedied. It would be quite possible to offer as a bonus for Indian enlistment the passage to the hills, and the facility for settlement there after a few years' service, saving the return passage, and retaining the conditions, as at home, of liability to service in the reserve. Thus the resources would be in India instead of in this distant island. They would be large and immediately available. There would never be the delays and fears of the arrival of reinforcements from England.

In any estimate of the value of the hills, the military question enters not only for military purposes,* as stated elsewhere, but for financial.

There is not only a saving on the sick expenses of English officers and soldiers in favour of the hills, but there is the saving in furloughs and sick leave. From the time the hill stations were started as sanatoria, this latter advantage was felt and taken advantage of. In many cases it no longer became necessary to give leave for the Cape or for Europe, but it was found sufficient to give a short leave for the hills, the soldier or civilian being still within hail. At the same time the efficiency of the service greatly gained. Many of these remarks apply likewise to the working and expenditure of the civil service, covenanted and uncovenanted.

Besides the great benefit to the public revenues obtained during forty years, and which has more than repaid any outlay for establishment, there has been great saving for individuals. Instead of the family being taken to Europe at the expense of the public servant, they could accompany him to the hills. So also many a wife and child, who would have been ordered home for health, has been sent to the hills, where it has been possible to make a visit within a short leave.

* With many of these questions I dealt in my paper read before the Royal United Service Institution in 1859 (vol. iii), "On the Organisation of the Army in India, with especial Reference to the Hill Regions."

So certain are the gains, that it would be thought that when it was decided to put a large proportion of the English soldiery in the hills, and that the necessary cantonments should be provided, the erection of such cantonments would have been long since completed. Such, unhappily, is not the course of Indian finance. Figures of diverse and discordant kinds are brought together to be made into totals and used for comparison.

It is a misfortune even for this country that the bounds of the national capital and national expenditure have seldom been well determined, and on this head it may well be said that the discussions before the Statistical Society on national stock taking have been deserving of more attention by public men than they have received. India is less advanced, and is being provided with the modern and expensive requirements of a new empire. It thus becomes of primary importance for Indian statesmen to consider all public questions under this aspect, for the delay of productive and reproductive expenditure signifies a positive loss, and not an economy or a gain, as those who cut down expenditure, under the notion of discharging a public duty, do not always discern. There is this relation of national administration to political economy, that to a great extent an empire is only one form of a manufacturing and trading establishment.

Only a few of the cantonments were provided, and therefore the whole proportion of troops proposed to be sent to the hills cannot to this day be sent there. If a Government commission had been appointed, or some Calcutta merchant had sent a clerk competent to make out a *pro formâ* account, it would have been determined that a large saving had been and could be effected, and in what way. The charges being for English troops, came, for a great part, into that formidable class of payments here, which tend so much to embarrass financial and currency arrangements.

The matter, however, goes further—It is to be observed that the English soldiery draw the same charge in the hills as in the plains, whereas the advantage of living in English climates could be accompanied by English pay, and by a large economy of public money in the reduction of the home charges.

In that respect, without formulating any sums in figures, it is certain that a very large saving can be effected, and in a most acceptable form. This is one reason why this question has been long since pressed by me on Indian and home administrations, and there appears some prospect of a movement being made. The measure must not, however, be treated as a minimum and delayed, but as a maximum, and put into effect as quickly as possible.

It is not remarkable that all these capabilities of the hills should have induced many distinguished officers to propose plans

for military colonies. Among these may be mentioned General Sir Vincent Eyre, and of those most active in the present day, General McMurdo.

In connection with the hills there comes naturally the consideration of our relations with the aboriginal populations. While we are stigmatised by some writers as recent invaders of India, the oldest populations bear evidence how epoch after epoch they have been subjected to grinding oppressions, from which our dominion comes to relieve them. The Mussulmans of various races were not our only predecessors as conquerors. The Hindoos have destroyed the religion and languages no less than the liberties of vast nations. It is not the millions of the Tamil speaking races alone which seek relief from Hindoo domination, but also the many millions of Kolarians, and particularly the tribes degraded to the position of pariahs.

Whatever jealousy and hostility of feeling we provoke among those who have in later times preceded us as conquerors of India, to the Dracidians and the Kolarians we offer the prospect of deliverance from a bitter oppression. Unfortunately as yet we have not fully appreciated the duties of such a task, but have in some instances abetted or upheld the domination of the Hindoos.

The hill aborigines include many hardy tribes, and they have a much greater disposition than the other races to cast in their lot with ourselves. Under judicious administration our relations with the hill aborigines would become the means of our acquiring the sympathies of other aboriginal populations of more importance, and affording to us valuable allies. It has followed in the course of events that we have bestowed more attention on Hindostani, Sanskrit, and Bengali, or even on the foreign Persian, than we have on the older vernaculars. The cultivation of these latter will follow on a better acquaintance with those by whom they are spoken. In this connection may be mentioned the constant efforts of Dr. A. Graham of Edinburgh to promote the advancement of the Southals, and the successful results of the Danish missionaries in this field of labour.

Indeed the influence of civilisation consequent on our occupation of the hills is of paramount consideration. Whatever may be said in depreciation of our rule in India, the main fact remains that we have procured for the people peace and a participation in the advanced civilisation of the west. That is our great task, for which we need no apology, and the means of best advancing it are well deserving of our serious care.

Much as has been effected by our sojourners in the plains, the result is small in comparison with the needs of that great portion of the human race committed to our rule. Although at first sight the

specks in the hills may appear insignificant in comparison to the labour to be undertaken, yet it can be shown that more will be obtained from the exertions of the statesmen sent from England, if placed under healthy surroundings, and still more if aided by the co-operation of a local English population.

Thus with small means and from small beginnings we may constitute a new empire of civilisation in India, as we have constituted an empire of conquest with small resources and almost by individual effort. In fact there is no subject connected with India so great in its associated capabilities as this one of the hill regions. It is not only the development of a field of enterprise for our people, but the best safeguard of the populations committed to our care, as well from foreign aggression as from the horrors and devastations of internal dissension. Indeed it offers to us the achievement of our noblest destiny in the world, the promotion of good and of happiness among mankind.*

DISCUSSION *on* MR. HYDE CLARKE'S PAPER.

SIR W. ROSE ROBINSON, K.C.S.I., appreciated the value of Mr. Hyde Clarke's paper, and the importance of the subject submitted to the meeting. He desired to supplement the information as regards the hill tracts of South India, by noticing the great highland plateau and ghaut ranges of the Coimbatore, Madura, Tinneveli districts, and of the native States of Travencore and Cochin, known as the Anemallah and Palny Highlands, and Permed, &c. (Travencore), ranges. He pointed out that the area of these plateau lands and hill slopes vastly exceeded that of the Neilgherry ranges mentioned by Mr. Hyde Clarke, and that they stretch almost down to Cape Comerin. These tracts have already attracted European enterprise, and promise to continue to do so with increasing activity. The Thevrai Hills (Salem) may also be noticed. Though of comparatively low altitude and narrow area, these accessible hills have attracted both the planter and those in search of an occasional sanitarium. As regards the Neilgherry plateau, as distinguished from the slopes, it must be noticed that the soil is poor, possibly too much so ever to attract the European agriculturist. Coffee industry is almost limited to the slopes; cinchona is grown as high as Ootacamund. He would not now allude to the prospects of the gold mining industry in the Wynaad and western ghauts generally; it

* I have been indebted for assistance and corrections to the Marquis of Tweeddale, Mr. A. Cassells, Sir W. Rose Robinson, Col. Hopkinson, Mr. Juland Danvers, Mr. Caird, C.B., our President, Mr. Samuel Jennings, and Mr. Samuel Ward of the Lebong Company, &c., &c.

is yet in its infancy, but promises to exercise a vast influence on the future of these hill districts, and possibly in parts lying far afield beyond the part now attracting the attention of capitalists in Wynaad. Mr. Hyde Clarke had very justly drawn attention to the fact that the native intelligence very rapidly follows the lead of European enterprise and capital in the development of new country and promotion of lucrative industries. When he first became connected with Malabar in 1846, coffee plantation was quite in its infancy, and entirely in the hands of European planters; but now, he believed, the coffee area in the hands of natives was almost equal to that which we still find in the hands of Europeans, and native plantation is extending. In some cases the natives supplant the European pioneers. For instance, the indigo industry in Cudappah and Nellore had passed entirely into native hands; gold mining, too, is apparently attracting the attention of native proprietors and capitalists. As regarding the aboriginal tribes of the hill districts, he did not know whether Mr. Hyde Clarke's remarks applied to the immigrant followers of European enterprise, or the indigenous tribes. Very large bodies of natives from other parts of South India settled in those hitherto sparsely occupied tracts, but the aboriginal tribes would probably disappear. This was the case with the Todas of the Neilgherries, who are rapidly disappearing, as also the Kurumbers and other jungle tribes who roam over the slopes, but they were replaced by much more industrious races from the low country. He did not look forward to a large or useful immigration and settlement of Europeans and English labouring classes in tropical India, and should on every ground deprecate European colonisation—whether military or other—of South Indian hill tracts.

The Rev. JOHN LONG said that he took a great deal of interest in this Indian question. So far as Mr. Hyde Clarke's exposition went it was correct, but it did not touch upon two great difficulties in connection with the subject. The problem was, could the European races perpetuate themselves and form colonies on the Himalayan plateau? and in the next place, would they have the means of living such that they could enter into competition with the natives? With regard to the first part of the problem, he asked a great number of medical men in India and elsewhere on the point, and they seemed to agree upon this, that up to the present time there was no proof of the possibility of the European race surviving; all the examples that were brought forward were rather adverse to the continuation. That was the opinion of the great majority; it might be wrong or it might be right, and so it would remain until other medical men would take the subject up by producing reliable statistics. With regard to the social aspect of the question, he might say that he had been a great deal himself in the Himalayan mountains and in the Neilgherries. He recollected spending a few days with Lord Napier in the Neilgherries, and as they were walking out together the subject came up; his lordship observed "that the greater part of the land there belonged to the aboriginal tribes and to natives, and that even if the Europeans could have possession of

it, it would involve a great deal of expense to get them up there; and the point was, could they be able to compete with the native." Where a native ryot could keep three children and a wife on 12s. a-month, it was rather difficult for a European labourer in any shape to compete with him. The European would very likely succeed if he went as a sort of *capitalist*, or farmer employing a number of natives under him; but that was an experiment that had yet to be tried. There was a very large class in India of East Indians that the Government did not know what to do with, their condition is one of an embarrassing nature. These were the two great difficulties. If they looked back to history, there was no doubt that natives and Englishmen belonged to the Aryan race, and it was a rather curious thing that they could not continue in India in the hills. At one time the Portuguese went in greatly for colonisation and for marriage with the native women of the country, but it was not a very successful experiment; they seemed in many cases to have been absorbed or to have degenerated. He had gone into the question in relation to the Portuguese in Calcutta, where they had been very numerous, and he had not found a single case where the race had continued pure, having degenerated in consequence of the admixture of native blood.

Mr. H. M. MACPHERSON had visited most of those hill stations, and so far as his own experience as a medical officer went, as well as the information he had derived from others, there was no reason to suppose that beyond the second generation the European could continue to exist without an intermixture of fresh European blood. Some years ago there was an attempt made, at the suggestion of Sir Vincent Eyre, to settle as colonists in the Deyrah Dhoon, a number of families of Portuguese extraction, and every endeavour was used to make the experiment successful, but it entirely failed.

Mr. JULAND DANVERS, referring to the concluding passages of Mr. Hyde Clarke's paper, regarding the extent to which the aboriginal inhabitants of India were interested in the question, said it seemed to him that the advantages that were conferred upon natives by developing the hill districts in that country, were really of an indirect kind, and that they must look upon the question more as one affecting European interests. No doubt a general benefit would at the same time be secured by any measure which would improve the European race in that country, and maintain the health and strength of the civil and military servants of the State, thereby enabling them the better to perform their administrative duties. He thought with Mr. Long and Dr. Macpherson, that there was very little hope, from what had been learned by past experience, of ever succeeding in colonising India by means of permanent European communities being established on the hills; but at the same time a kind nature had given them those hills, and a European section had been placed there to govern the country. It was, therefore, their bounden duty to take advantage of the opportunity they afforded of recruiting health and strength. Mr. Hyde Clarke had said that railway communication had been very much neglected.

Well, that might to a certain extent be a true bill; but all those matters that involved expense, also involved difficulty, and the great difficulty in extending railway communication in India was the want of money, which hitherto had been obtained on interest paid by the taxpayer of India. Railways had already conferred immense benefits on that country; they would continue to do so, and are now earning dividends which covered the interest. The first duty of Government was to provide railways for the great commercial highways, and to protect the people from famine; but he did not think that the hill stations had been altogether neglected, for there were very few now which had not railways brought almost to their very feet. Whether they turned to the upper part of the Punjab, to Simla and Kussowlee, or to Nynsee Tal, Darjeeling, or in the south to the Mahableshwar Hills and the Neilgherries, they found railways sometimes at the very foot of the mountains, and always within easy reach. In the case of Darjeeling, a tramway had been taken up the mountain several thousand feet. Much had been done, but he admitted much more remained to be done in the way of railway extension in many directions. There was one important question in connection with the subject, which he thought deserved great consideration at the present time, and that was, how European children being born and bred in India, could best be allowed the advantages of the hills for training and education? He thought that the hill sanatoriums and the uplands of India should certainly be made as much available as possible for this object. Not a year passed without a large importation for service under the Government and the railway companies, of that class of Europeans who could not afford to send their children to Europe to be educated, and they were obliged to depend on such education as was afforded in the plains, where their constitutions were ruined and their physical powers exhausted by a tropical heat. He trusted that before long strenuous efforts would be made in a systematic way to bring about a plan for sending their children to the hills. Both the Government and the railway companies were in favour of it. One difficulty and another arose with regard to the parents, who hesitated to allow their children to go a long way off out of their sight; but railways had reduced distance, and the telegraph had annihilated it, and therefore he had no doubt that good sense would prevail, and that parents would appreciate such a benefit on behalf of their children. It was a matter worthy the attention and consideration of all Englishmen.

Dr. T. GRAHAM BALFOUR, F.R.S., commenting on the subject of the health of the troops in India, said that he had not the advantage of the gentlemen who spoke before him, of any personal experience in the matter of Indian life; but in the course of his official career, it had been his duty to inquire carefully into the subject of the health of the troops, and in his opinion there had been one or two important points lost sight of by the military authorities in regard to the subject. They waited until the health of the troops had been so much deteriorated in the plains, that they were no longer fit for the efficient duties of soldiers, and then they

sent them up to the hills to regain their health. It appeared to him—and he had taken some pains to inquire into the subject—that the better course would be to send the troops to the hill stations on first landing in India, to enable them to become habituated to the climate, and also to the customs of the country, and after they had been there for a sufficient time, to bring them down to the plains and gradually work them towards the sea-board, to embark them for England when their term of service had expired. The reverse had been the rule hitherto adopted. They were taken out to India, first employed in the plains, sent up to the hills generally as invalids, and when sufficiently recovered were brought down to the plains for duty, and if their health again gave way, sent home as invalids to be discharged. He thought it was a great misfortune that the course he had suggested had not been pursued. He concluded by saying that the importance of the hill district had not been sufficiently appreciated by the military authorities as a means of keeping men in health during the first few years of their service. He trusted that the system would be carried out, and as grafted upon it they might try the possibility of locating some of the time-expired men in the hills, and endeavour thus to carry out the principles which had been discussed that evening on the subject of European colonisation in the interests of India. Of course such a measure could only be carried into effect with the free consent of the men to be thus located.

Mr. TRELAWNY SAUNDERS said that there could be very little question that an enormous field opened itself up in the direction of the colonisation of India, in the sense of the introduction there of European capitalists, not of European labourers; and the development of India, not only for the benefit of her people, but for the benefit of this country, was the direction in which he had no doubt Mr. Hyde Clarke wished to press colonisation. It was not only in the development of communication by roads and railways in India, so necessary to bring about that balance in the distribution of food supplies especially, which the people particularly required in times of famine when facilities for the distribution of food made all the difference between starvation and non-starvation, but in many other directions, particularly in that of the utilisation of waste products, that they must turn their attention. At the present time he knew that private enterprise was directed to morasses full of the bamboo, that had hitherto been of no use to mankind, which was now being looked to as one of the principal resources for paper making; and amongst other substances one was brought to his knowledge that afternoon, very little known in the market, suitable for tanning purposes. Mr. Hyde Clarke with his far-seeing insight, pointed to the great Himalayan region and to the few parts that the English occupied, at long intervals, along that region, in comparison with the vast extent of ground which those mountains occupied. India had itself more than 2,000 miles of frontier on the north, and the countries beyond had been looked upon, as they formerly looked upon the interior of Africa, as a vast desert of no use to mankind. But they had along those 2,000 miles of frontier, the

greatest, most productive, and most ancient wool field on the face of the earth, and yet out of that region they scarcely got a bale of wool at the present time. When they remembered that the original prosperity of this country was derived from the wool trade (and the lord chancellor's woolsack in the House of Lords was the emblem of that prosperity), he believed that their interests in India would be very much advanced by opening up access to this great wool country, and perhaps more so than by any other single circumstance whatever. The quality of the wool was unlike anything in any other part of the world; certain portions of it were remarkable for lightness and other high qualities, and the question of the carriage of the wool down to navigable rivers and railways, was solved by the development which the animal itself had attained there and nowhere else. The sheep of Thibet was a beast of burden, capable of carrying loads of from 20 to 50 pounds weight. Flocks of those laden sheep, amounting to 1,200, were often driven along the mountain paths, attended only by half-a-dozen men with their dogs, thus settling the whole question of the transit of this wool down to the frontier. No doubt the attention of the Government of India had been called to the subject, and something had been done to encourage trade with the interior of Asia, but the steps hitherto taken had been quite unsuitable. After a few more remarks upon cognate questions, Mr. Saunders concluded by saying that by developing the communication along those 2,000 miles of frontier, and into the interior of this region, without exception the greatest wool field on the face of the earth, they had a source of wealth incomparable.

Dr. GUY, F.R.S., in commenting upon the subject of the intermixture of European and Indian blood, pointed out that there were two questions comprised under this head of inquiry; the first related to the possibility of maintaining the population by native half-castes; the other by the issue of intermarriages of Europeans with Europeans, the issues of such marriages remaining in the country. Sometime ago, he said, a somewhat eccentric author, Dr. Knox, of Edinburgh, writing on the races of mankind, insisted very strongly on the hopelessness of the second procedure. He carried his views on this point so far as to assert that the European races could not permanently occupy America, so that if emigration into America should cease, and the stream of emigrants be diverted to some other continent, the present population of America would slowly decrease and ultimately die out. Dr. Guy sympathised very sincerely with what had fallen from Dr. Balfour respecting the preservation of the health of our troops in India. What had been shown by Jackson to be true of the West Indies, would prove equally true of the East Indies. The troops should begin their Indian service in the high land, and end it on the coast.

Mr. M. G. MULHALL thought that Englishmen had reason to be proud of India, and to have every confidence in the future of their government in that country. He did not at all share in the idea of their inability to colonise it, because there was nothing so fructify-

ing and fertilising in every part of the world as English capital. Let them look at the wonders that had been wrought by the Portuguese in Brazil. They found a country there four times the size of India, inhabited only by Indians, producing nothing. They had made it an important and productive country. The coffee of Brazil was more than half that of the world, and it was one of the most valuable crops that the world produced. He said then why should they not do as much in India as the Portuguese had done in Brazil. They had done undoubtedly a great deal; they had conquered India, and imposed upon her the English yoke, but it had been for her advantage. They had spent 120 millions sterling within the last few years in constructing railways, which had benefited not only that country, but they had given rather more on the average return to their shareholders than the railways of Great Britain; in other words they had given over 5 per cent. net profit to the shareholders, and he did not see in the least why they should be at all alarmed or throw cold water on the efforts made for the advancement of that country.

The PRESIDENT (Mr. James Caird, C.B., F.R.S.) in moving a vote of thanks to Mr. Clarke for his interesting paper, desired to point out that some of the speakers in the discussion appeared to have misunderstood the object of the paper, which, as he heard it, was not to enlarge the population of India, but to encourage migration of the natives from overpeopled parts to those where there was still room for them, and to provide European capital and superintendence to direct their industry to profitable results. One of the gravest questions connected with India at the present moment, arose from an apprehension that the existing population were increasing faster than their means of support. If there was barely food for them at present in some parts of India, in average harvests, and if the people were increasing at the rate of 1 per cent. a-year, or the half of that, they would in twenty or forty years, as the case might be, require one-fifth more land of equal quality with that at present cultivated, or must make the present area one-fifth more productive. There had never been a problem of greater difficulty encountered by the British Government, which could not evade its responsibility by leaving the remedy to nature. And no one who had studied the subject, would recommend any project which might tend to aggravate that difficulty. While in India he had visited the hill districts of the Neilgherries, where he had seen coffee plantations, tea gardens, and cinchona culture. He had also been for the last eighteen years interested in the cultivation of tea, both at Darjeeling and in Assam. In these districts suitable soil and good management had given satisfactory returns. But the value of the tea exported from India, and that of coffee, showed but a very moderate return on the whole for the capital expended. In regard to cinchona, the bark of which yields quinine, a febrifuge, there were several successful and considerable Government plantations in various parts of India, one of which he had visited at Ootacamund in the Madras presidency. The cultivation costs 80*l.* an acre before the trees begin to yield the bark, which is peeled in

alternate strips up the stem, the other strips being taken the following year, and the tree resting the third. The wound is covered with moss, bound round the stem, which enables the bark to grow again. But though, when the plantation is well managed, it proves highly remunerative, the capital sunk is so large before a return is reached, that capitalists only can venture to engage in it. The rapid growth in that climate of fast growing trees is remarkable, Australian eucalyptus having been known to make 12 feet in a year in favourable situations, and such quick growing trees are most valuable for fire wood, which was getting very scarce. But gold, if we can trust to the daily announcements of new companies, seems the most promising crop of all in the hill districts of Southern India. He had been asked by the late viceroy, now a member of this Society, to look into this question when in that part of India early in 1879, and he had examined several of the planters, and also Mr. Brough Smyth, the experienced surveyor brought by the Government of India from the Australian gold fields. The opinion of that gentleman was very favourable to the prospects of gold finding and crushing. But neither by him nor by the planters who owned the land, was more asked for them than a modest sum to develop some of the workings so as to ascertain whether they were likely to pay. That will no doubt be done, but the sudden rush of gold companies, which has changed the demand for a few thousands of pounds into more millions before a paying result had been verified, is alarming. The capital asked for from the public for gold crushing already exceeded all that had hitherto been invested in the coffee, tea, and cinchona industries of the hill districts of India, and if the most of it should be expended on labour, would give full employment to the spare labour of the adjoining countries for many years to come. He was exceedingly struck with the fact he learned when at Roorkee, in Northern Bengal, where the great Government workshop was, where their engines and machinery were manufactured; Mr. Campbell, the superintendent, told him to his astonishment that he could import Swedish timber from Sweden to Calcutta, and bring it up 1,000 miles to Roorkee, more cheaply than he could bring timber 200 or 300 miles from the adjoining Himalayas; and it did seem to him (the speaker) that there was some great want of organisation in arrangements that could have permitted this to be the case. As a sanitarium the hill districts were most important; for it ought not to be forgotten that they could not hold India without a large European force. They had an English army there of from 60,000 to 70,000 men, which must always be kept up. They held India by the sword—there was no mistake whatever about that. Mr. Clarke's views were that if there was a large European military and civil population—men carried out at a great expense to the State—it was most important that provision should be made so that they should be kept in the best state of health which the circumstances of the country could admit. He thought the statements on this point made by Dr. Balfour were worthy of consideration on the part of the Government. It did seem to him a reasonable suggestion that soldiers when they were landed in India, instead of being

first kept in the plains during the extreme heats of the climate, to which they were entirely unaccustomed, should rather in their turn be taken to the hills and gradually acclimatised, and subsequently be brought down to the plains; and thence after their term of service in India, passed on to England, less enfeebled than they very frequently were under the present system. It was perhaps inevitable, but none the less deeply to be regretted, that Indian subjects so little engaged public attention in this country. We must hope that when the engrossing question affecting the five millions of Ireland has been satisfactorily dealt with, there would be some consideration given next session by parliament to the not less critical condition of our 200 million fellow subjects in India.

MR. HYDE CLARKE, in reply, said that one great misfortune which he had had was that he had been addressing an audience in which there were many distinguished Indians. India was so vast, and his subject went over so large a geographical area, that it was very difficult for men of the greatest experience not to avoid, in speaking from local knowledge, erroneous results as to other portions of the country. However, he had got pretty well through the ordeal, and however he had been criticised, the importance of the subject at all events had been vindicated, while he individually, as the author of the paper, had received a very large amount of information, which would help him in the development of the subject in future years. It had been asked whether it was possible for Europeans to perpetuate themselves in India. When they talked of India in regard to this question, of course they meant the hill regions. The President had said very clearly that he had in no respect contemplated the encouragement of mixed races. Dr. Guy had stated what he (the speaker) believed to be a perfect truth with regard to mixed races, wherever they were met they had always the same characteristics. He recollected a very happy phrase which was used by the Turks with regard to their Eurasians, the Levantines. They did not call them half and half, they used two words, which were something like "half moiety," two halves which did not fit. It was said that they had the vices of all their ancestors, with a degree of cunning derived from the more advanced race, which made them still more mischievous members of society. Generally speaking he believed that would apply to mixed races all over the world. Dr. Guy had very well called their attention to a psychological fact, which showed the peculiar nature of the constitution and minds of those individuals. He had spoken also of Dr. Knox's views, but he (the speaker) had no question that Dr. Knox was wrong with regard to the United States. He knew absolutely that there was a large proportion of the population of New England which was self-propagating, and that experiment had been going on for a very long period. The city of Boston, in Massachusetts, celebrated the two hundred and fiftieth anniversary of its foundation last year, and it had been followed by many others. There was, however, a very curious phenomenon which had not been sufficiently examined, and which affected apparently some races of men and some races of animals—it was the effect of the

transplantation of animals from one district to another. Even in India he had heard that horses moved from one district to another would die of the change; and it was certainly a very curious thing that in some circumstances an animal died by transplantation; and with regard to man, there were local influences of soil appreciable, he had given it the name of creolitation. With regard to the main question of degeneracy, most of the medical evidence applied to the Eurasians as to descendants of Englishmen; they had three generations in that very district of Darjeeling in as healthy a condition as any one could desire, with their children running about with as rosy cheeks as in any part of this country. There did not appear to be the smallest foundation for the opinion that the English race could not be propagated with English blood in what might be called the English climates of India. It was possible, as he had said, that there might be changes from some undistinguishable cause affecting the forms of individuals. With regard to what we know as Yankeeism, and which is found in the States and in Australia, an English family might emigrate to Canada and the children born before the emigration were of course positively English in their characteristics. One of the children born however on American soil would be what was called a Yankee. The next child would be English, and the next a Yankee, and so on. With regard to the solution of the question, however, it must be left to the celebration of the two hundred and fiftieth anniversary of Simla or Darjeeling. In the meantime they need not disturb their minds very much with regard to it. The subject had likewise been embarrassed by people supposing it was proposed to settle the Eurasians in the hills. There could not be a population more unfitted for such a purpose. The experiments of Sir Vincent Eyre conclusively proved that Mr. Vincent had very great zeal on the subject, and took a practical mode of testing it, and it failed. Another thing that had failed, had been the sending of soldiers and settlers debilitated by the process Dr. Balfour had described, up to the hills; but this had nothing to do with the question with which they were dealing, which was the question of the colonisation of English capital. That implied of course the settlement of English capitalists as well as English soldiers in those districts which were most compatible with their constitutions. Then there was something further than that. They could see clearly by the experience which they had in India, that these were places where you could put yeomen. They had the materials of that in men from Cumberland, Westmoreland, &c. Their passage having been paid out, they might be employed for a few years in India to work out their passage; then they would remain and go and do what they would have done at home, viz., get their small place in the hills and there earn a maintenance. With regard to the aborigines, his friend Sir W. Robinson had referred to the Todas. Well they knew that the Todas were a very peculiar race indeed; but the Himalayan tribes were not diminishing, but rather advancing. The Lepchas had suffered most by contact with Europeans in Darjeeling, but they were not extinct, and it was to be hoped that they would come under happier auspices. He thought a great deal of what

Mr. Danvers had stated with regard to the railway children. It was perfectly clear and practicable to place these children on the hills. If they recollected what the Lawrences did, and what had been done in commemoration of them by the establishment of military asylums in various hill districts, it was evident it would be a very good thing to do the same thing for what Mr. Danvers had called "railway children." What Dr. Balfour had said, and which had been confirmed by Dr. Guy and others, with respect to the stationing of English soldiers, was perfectly practicable. It had been admitted by the Government years ago. There appeared to be no reason why after allowing for contingencies for active service in the field, the English soldier in India should suffer more than in his service in any other parts of the world. With regard to the gold, he must say that his tendency, and he was not altogether without some practical acquaintance with the subject, was to go with Mr. Brough Smith. There was no doubt that some as good gold mines as there were in the world had been so worked as not to produce the gold in the ores, but this was now remedied. His own calculations on the subject, however, were that the waste of capital in this connection was not likely to be very great, because it was a process that would check itself. They could not go on more than about a couple of years experimenting on the production of gold, people generally got sick of it, and there was an end of it.