9 3,000—5-3-98.

Revenue (1899) Department.

MISCELLANEOUS SERIES.

G.O., No. 480

DATED 2nd February 99

[Despatch Abstract.]

Tinnevelly - Trichinopoly Chord Line

Recording G.O. (P.W.D.) ordering that the Note by the Consulting Engineer for Railways, Madras, on the project for a ——— be circulated for an expression of opinion on the proposal contained in the Note.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
Cuo.	2725/99	647R 12-5-99					
Cuo.	3149/99	Lr 1859 25-5-99					

Rev. 1899. Departt.

RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

Warrant No. 675

9/k 2/2/99

Recd. 26-1 } 1899. *Enclosures* two

Regd. 26-1 } *Spare copies*

G.O., No. 85 Ry., 18th January 1899.

G.O. Mis. Nr. 460 7 2nd Feby 1899

JANUARY. Recorded.

1/11 1.2.99

1 To the Board of Rev (Land Rev)
1 " " (Rev. Sett) } 1-2-99

RS 30-1-99 GJ 29-1-99

Tirukkoyilur-Trichinopoly Chord Line

Ordered that the Note by the Consulting Engineer for Railways, Madras, on the project for a — be circulated for an expression of opinion on the proposal contained in the Note.

28/1/99

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

G.O., No. 169, Revenue, dated 22nd March 1898.

Note by the Consulting Engineer for Railways, Madras.

During famine times much anxiety is always felt about a certain tract in the Madras Presidency, which may roughly be described as about 100 miles long and the same broad, comprising parts of the districts of Trichinopoly, South Arcot and Salem. The tract in question is bounded on all sides by railways, but the physical conditions are such that great parts of it are practically very little assisted by the circumjacent railways, especially in famine years when draught cattle die off in large numbers. The irregular quadrilateral may be roughly described as having at its four principal angles the railway stations of Morrapur, Cuddalore, Tanjore and Karur. The Jalarpet-Erode section of the Madras standard gauge railway runs to the west of it; part of its northern side is bounded by the Cuddalore-Tirukkoyilur section of the South Indian metre gauge railway; while its remaining sides are bounded by the Tanjore-Trichinopoly-Karur section of the South Indian Railway on the south, and by the Cuddalore-Tanjore section of the same railway on the east.

2. The only enquiries into the possibility of opening up this tract of country which have hitherto been made have taken shape in a recommendation for an east and west line from Salem on the Madras Railway to Portonovo, — a petty port on the coast near Cuddalore station of the South Indian Railway. It would appear that the origin of this idea of opening up the tract by means of the Salem-Portonovo east and west line arose in the fact of a certain traffic in iron ore having many years ago existed across country in this direction, from the source of the ore near Salem to certain iron works at Portonovo, long since abandoned as commercially impossible in the face of steel developments. If this Salem iron ore industry should ever be resuscitated, it would undoubtedly be more heavily handicapped by a railway lead of 207 miles, from Salem to Madras, instead of 116 miles to Portonovo. This, at $\frac{1}{8}$th pie per maund mile, would give Portonovo an advantage of Rs. 1–9–9 per ton; but against this must be set cheaper freights and cheaper handling charges at Madras when such cargo as ore can be handled directly into the ships, by mechanical carriers, as can doubtless be done hereafter at the projected docks.

3. The proposed Salem-Portonovo route complies well enough with the condition of bringing every part of the danger-tract within two days march of a railway. But like the Villupuram-Dharmavaram line, the Salem-Portonovo line would be likely, if built, to remain a famine line pure and simple; an efficient, if expensive, insurance premium, but in ordinary years scarcely more than paying working expenses.

4. It has suggested itself that all the purposes of a famine line might be perfectly well served, while at the same time there would be a great commercial gain, by the construction of a north and south line through the quadrilateral, in place of the east and west line. The north and south line would, quite as well as the other, fulfil the famine-railway condition of bringing every village of the tract within two days carting of the railway; while it would in addition possess the great advantage of shortening by 37 miles the through route between Madras and Southern India. The north and south line, moreover, would traverse, throughout much of its course, a more densely populated country and one likely to afford better local traffic. Its value

too in civil administration would be great, while it would possess the additional advantage, from a military point of view, of shortening by 37 miles the distance from Madras to Trichinopoly.

5. The Salem-Portonovo line was surveyed by Mr. H. T. Geoghegan in 1885–86, and the results will be found embodied in G.O., No. 49 Ry., dated 18th January 1888. The cost of the $116\frac{1}{2}$ miles of metre gauge line was estimated at about Rs. 60,000 per mile, or at a total figure of Rs. 70 lakhs, with the rupee at 1*s.* 6*d.* Much of its cheapness was due to its crossing a comparatively small amount of waterway, only about 1,600 feet of large bridging and about 21 feet per mile of minor bridging with, in addition, some 320 feet of causeway. But in the passes of the mountains east of Salem its gradients rose to a height of 1,200 feet above the sea.

6. The alternative north and south line, which is now proposed, must cross a considerably greater waterway; but on the other hand its traffic will require to be lifted to less than half the vertical height to be surmounted on its proposed predecessor, while the length to be constructed would be 24 miles less, or say Rs. 15 lakhs worth, a sum which will go far to cover the cost of the extra bridging involved.

7. An important difference between the two alternative routes is that the Salem-Portonovo line would always be open to the objection of giving the South Indian Railway Company access to country acknowledged to be the legitimate territory of the Madras Railway Company. The influence of the north and south line on the other hand would be practically entirely confined to territory acknowledged to appertain to the South Indian Railway Company, — territory separated by a line of mountains from the Madras Railway Company's South-west line.

8. The moment it suggested itself to substitute a north and south line for an east and west line for the opening up of the tract under reference, the problem of the termini of the chord presented itself for solution. The southern terminus was obviously Trichinopoly junction. Almost but not quite so obviously, Villupuram suggested itself as the northern junction. But on the problem being gone into more carefully and on its being realized how far to the west the line was obliged to go if important local centres were to be tapped, it seemed preferable to relinquish the idea of aiming at Villupuram and to make the junction at Tirukkoyilur, a station on the Villupuram-Dharmavaram branch, 20 miles west of Villupuram. The length of new line to be constructed will be 92 miles, as against the $116\frac{1}{2}$ from Salem to Portonovo.

9. In comparing the distances between Madras and Trichinopoly by the existing and the proposed routes, it appears that while from Villupuram *viâ* Cuddalore and Tanjore to Trichinopoly is 150 miles, the distance from Villupuram *viâ* Tirukkoyilur and the new route to Trichinopoly is only 113, giving a saving in through distance of 37 miles. This means a saving of some 12 annas to one rupee per ton, according to class of chief articles of traffic, on all freight between Madras and Southern India. There can be no doubt that this is an important saving, and the relief which it will afford to the flow of trade will be very appreciable.

10. The question of waterway on the Trichinopoly-Tirukkoyilur chord line has been carefully gone into by the Chief Engineer of the South Indian Railway, whose verdict is that it will require 4,078 lineal feet of major bridging, and that the minor bridging will run to about 45 lineal feet per mile. These figures are considerably in excess of Mr. Geoghegan's figures for the Salem-Portonovo line which as already explained runs more or less parallel to, instead of athwart, the drainage of the country. Allowing Rs. 300 per lineal foot of major and Rs. 50 per lineal foot for minor bridging, it appears that the excess cost of bridging on the route now proposed may involve an expenditure of seven or eight lakhs more than was anticipated by Mr. Geoghegan. But as already explained this would be more than covered by the saving of length to be constructed.

11. I have obtained a list of the existing waterways on the district road which runs more or less parallel to the portion of the chord line which traverses the Trichinopoly district. On this section of the road there are 4,928 lineal feet of bridges and culverts, and there is the unbridged Vellar river 630 feet broad. In

addition there are 2,486 lineal feet of causeway. Total 8,044 lineal feet of waterway of sorts. The independent estimate framed by the Chief Engineer of the South Indian Railway gives for this length (omitting the Cauvery and Coleroon) 1,688 lineal feet of major bridging and 2,000 feet of minor bridging; and to this must be added for the Cauvery-Coleroon section 3,885 lineal feet, making a total of 7,573, which compares well with the 8,044 on the existing road when allowance is made for the enhanced breadth which, on such a road, causeways have a way of assuming.

12. The Cauvery and its affluent the Coleroon are bridged on the existing road, close to Trichinopoly, by two bridges built in 1849 and 1852 respectively. The Cauvery bridge consists of 32 arches of 49 feet span. Total length 1,936 feet. Total waterway 1,568 feet, cost one lakh. The Coleroon is bridged by 32 arches of 60 feet span; total length 2,685 feet; total waterway 1,920 lineal feet, cost $1\frac{1}{2}$ lakhs. These road bridges have cost Rs. 52 and Rs. 56 per foot respectively. Railway bridges will cost fully Rs. 200 per lineal foot, or say 4 lakhs and 6 lakhs, respectively. The three drainage areas which combine to form the Vellar, on the boundary of Trichinopoly and South Arcot, will apparently require about 750 lineal feet of bridging, and the Panar, at the north end of the line, near Tirukkoyilur, will, according to the Chief Engineer, South Indian Railway, require 1,400 lineal feet though Mr. Geoghegan proposes 1,500, on a rocky bed, at a cost of $4\frac{1}{2}$ lakhs.

13. The following is a statement of the taluks through which the railway would pass and the average density of their population:—

Taluk.	Area square miles.	Population.	Density, per square mile.
Trichinopoly	542		
Musiri	762	360,829	666
Perambalur	674	282,619	371
Vriddhachalam	596	195,006	289
Kallakurchi	868	222,793	374
Tirukkoyilur	569	240,181	277
		257,132	452

Thus the average density of the population of the taluks directly served is about 390, or omitting Trichinopoly taluk, which owing to its big town is exceptionally dense, about 350 people to the square mile. The average density of the population of the whole of the districts of Trichinopoly and South Arcot is about 400 people to the square mile. The principal towns served by the line are the following: Trichinopoly, population 91,000; Srirangam, 22,000; Tripatur; Chettycolum; Perambalur, 3,000; Volcondah, 1,200; Chinna Salem, 5,500; Kallakurchi, 3,000; Tirukkoyilur, 5,700.

14. In the course of his investigations, Mr. Geoghegan made an estimate of an alternative piece of line which is coincident with the northern 46 miles, or just half, of the Trichinopoly-Tirukkoyilur chord. This section he estimated at Rs. 55,232 per mile, or Rs. $24\frac{1}{2}$ lakhs. Taking the southern 46 miles at Rs. 65,000 per mile, or at Rs. 30 lakhs, and adding 10 lakhs for the Cauvery and Coleroon, we get Rs. 65 lakhs as the cost of the entire line. To cover interest on this sum, reckoning capital as worth 3 per cent., will necessitate an excess of about Rs. 2 lakhs per annum of earnings over working expenses.

15. It would not be unnatural if the South Indian Railway Company were to object to the proposed chord line on the grounds that it would result in a large quantity of goods, mails and passengers being diverted from the existing circuitous route, 150 miles in length, between Trichinopoly and Villupuram. All traffic having its origin at stations south of Trichinopoly or north of Villupuram and destined for stations north of Villupuram or south of Trichinopoly, respectively, will, after the opening of the chord, pass over 93 miles of new line and 20 miles of old line instead of over 150 miles of old line. I find that for the year 1896 the value of the earnings of the South Indian Railway Company, from the traffic referred to, was Rs. $3\frac{1}{4}$ lakhs for passengers and Rs. $5\frac{3}{4}$ lakhs for goods; a total of Rs. 9 lakhs. On the assumption of equal mileage rates prevailing on the new route, about Rs. $2\frac{1}{4}$ lakhs of this would be lost to the Company. But this loss would be a clear gain to the general public, and it

would be more than made up for to the South Indian Railway Company if a clear profit of Rs. 46 per mile per week should be realised on the new chord. This profit on the chord ought to be easily realisable, because it is not necessary that it should be earned on the chord itself; to the actual earnings of the chord must be added the additional earnings on the main line due to the tapping of a country now unprovided with a railway.

16. The famine insurance value of the line, that is the amount of the annual payment necessary to secure an insurance premium equal to the sum likely to be expended in the district during famine years, must not fail to be taken into account by Government who are the chief owners of the South Indian Railway. Much information in regard to the value of a line of railway through the tract in question will be found incorporated in Board of Revenue (Revenue Settlement, Land Records and Agriculture) Proceedings No. 397, dated 25th May 1897. The country traversed by the existing loop line between Villupuram and Trichinopoly is one of the richest districts in India, a district perfectly well able to contribute a paying volume of traffic to a line of its own. If objections to railway extensions are always to be opposed on the grounds of their short circuiting some existing line, development will soon come to a deadlock.

17. The South Indian Railway Company will doubtless not fail to notice that the loss likely to accrue to them through the short-circuiting of their Villupuram-Trichinopoly loop will be very appreciably offsetted by the gain in their retaining for longer distances on their own system certain traffic which, under the "shortest route agreement", now finds its way over considerable distances of the Madras Railway. I cannot just now say at how much this gain may be estimated, but it can easily be worked out by the traffic officers of the South Indian Railway. The distance from Trichinopoly to Katpadi junction appears at present to be about equal, 249 miles, whether the Erode route with 162 miles of the Madras Railway is adopted or the South Indian Railway *viâ* Villupuram is adhered to. With the aid of the new route, the South Indian Railway Company will have it all their own way on the 172 miles from Trichinopoly to Katpadi, and can use this route for consignments to several of the Madras Railway stations south of Katpadi towards Jalarpet. But for consignments from stations north of Trichinopoly to Jalarpet, the Erode route must apparently still hold its own. Traffic from south of Trichinopoly to Arkonam, on the other hand, will, on the opening of the chord line, find it about six miles shorter to adopt the Katpadi route than to confine itself to the South Indian Railway. All these and other considerations will have to be given full weight.

18. The distance from Salem station of the Madras Railway through the Atur valley due eastward to Chinna Salem on the proposed chord line is about 56 miles. This valley is traversed by a good district road. The strip of country about 50 to 70 miles wide, running between the Madras Railway and the proposed new line, is, I understand, fairly describable as a famine danger zone. It consists for the most part of sparsely populated highlands. More than half of it is in the Salem district and the rest in Trichinopoly and South Arcot. The southern part of the strip of country in question will be in easy railway communication with the Salem-Erode section of the Madras Railway, with the Trichinopoly-Erode branch of the South Indian Railway (though the Cauvery is an obstacle), and with the new chord line. All the parts north of this, that is perhaps all north of Trichengod, Namakkal and Musiri taluks, will trade on the one side with the Salem-Jalarpet section of the Madras Railway and on the other with the new chord line. There appears likely to be no conflict of interests between the two Railway Companies, whose spheres of legitimate influence are tolerably clearly defined by natural physical features in a hilly difficult country, and by the boundaries of Civil administrations. Each District Board will preferentially make its own feeder roads so as to feed its own proper railway. If the trade which concentrates at Atur is worth tapping, there will probably be some competition for it between the railways. It is 35 miles from Salem and 20 miles from Chinna Salem along the district road. If the Madras Railway Company's scheme for a narrow gauge steam tramway, from Salem station to Salem town and on to the foot of the Shevaroy hills, should ever take practical shape, it may end in its extending in the direction of Atur.

19. I now propose that the South Indian Railway Company be asked to give the subject their best consideration and to inform Government what their views are; and to say whether they would be prepared to make a survey of the chord line when their present staff employed on various surveys has leisure to do it; and whether in the meanwhile they would be prepared to make a regular traffic survey. Collectors of districts and Chambers of Commerce might also be consulted. There is no urgent hurry about making the Engineering survey, because there is no chance just yet the money being available for construction. But if the traffic survey can be obtained, Government will be in a better position to form a judgment as to the merits of the scheme.

Madras,
14th December 1898.

Francis J. E. Spring,
Consulting Engineer for Railways.

Order—No. 85 Ry., dated 18th January 1899.

Copies of these Proceedings will be forwarded to the Collectors of Tanjore, Trichinopoly, Salem and South Arcot for an expression of opinion on the Consulting Engineer's proposal.

2. Anything which the Madras Chamber of Commerce may have to say on the subject will be of assistance to Government in arriving at a decision.

3. The Agent, South Indian Railway Company, will be asked by the Consulting Engineer to lay the Note before his Board with a view to educing an expression of their views on the subject. He will also be asked whether he can arrange for a traffic survey at an early date, and whether he would be prepared, with his Board's permission, to make an engineering survey of the route as soon as staff become available for the purpose.

(True Extract.)

Under Secretary.

To the Collectors of Tanjore, Trichinopoly, Salem and South Arcot,
" Revenue Department, through the Revenue Department.
" Chamber of Commerce, Madras.
" Consulting Engineer for Railways.

Exd. A. Rungasawmy Aiyangar.

Government {1898} of Madras.

REVENUE.

Recd. } 1899. *Enclosures*
Regd. *Spare copies*

G.O., No. 169, 22nd March 1898.

MARCH.

Famine Protective Railways.

Selecting, in modification of G.O., Mis. No. 5236, dated 7th October 1897, certain lines as best suited for construction as —, and addressing Government of India on the subject.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

Read—again the following G.O., Mis. No. 4403, Revenue, dated 5th November 1895:—

Read—the following letter from DENZIL IBBETSON, Esq., C.S., Officiating Secretary to the Government of India, Department of Revenue and Agriculture (Famine), to the Secretary to the Government of Madras, dated Simla, the 18th September 1895, Circular No. 18-31—1:—

Under existing arrangements no portion of the Famine Insurance Grant can be expended upon any railway unless it has been classed as protective, with the approval of the Secretary of State. The Famine Commission indicated in a general manner the tracts of country that needed most urgently to be protected by railways. The railways required for the direct protection of these tracts, together with the East Coast (Madras—Calcutta) and South Indian Railways, which the Secretary of State has since accepted as protective, either have been completed or will be completed within the next few years; and it is now necessary to obtain sanction to the classification of other lines as protective, in order that contribution may be made to the cost of their construction from the Famine Insurance Fund.

Page 172, Part II of Report.

2. The principle upon which the construction of a railway from the Famine Insurance Grant is justified is, that it will, within a reasonable term of years, effect a saving in expenditure on the relief of famine equal to the cost of its construction. There are probably few, if any, railways not yet constructed in India to which this test could be applied successfully in its entirety. But almost all railways in this country must be in some degree protective; and it is apparently permissible to extend to them the principle, by meeting from Famine Insurance Funds, not the whole cost of their construction; but such a portion of it as it may legitimately be hoped they will recoup to the State by decreasing the cost of famine relief. The application of this principle in any particular case will however be difficult, while it will always be open to criticism. On this, and indeed on every ground, it therefore seems advisable to arrange projected railways in a list in order of their protective value, measured as explained above, to strike off each as completed, and to confine contributions from the Famine Insurance Fund to the particular works, which for the time being head the list. It is with the view of procuring the assistance of the Government of Madras in the preparation of such a list that I am now directed to address you.

3. The maps attached to the Famine Commission's Report show that, setting aside the protection afforded by irrigation works, there is hardly any part of India which may not suffer from drought and require to be supplied with food from without. Moreover, drought is not the only cause of scarcity. Recent experience in the Central Provinces has shown that excessive rainfall may cause distress; and floods in Orissa have resulted in positive scarcity. And in such cases carriage by road often becomes difficult or impossible. The Famine Commission considered that a railway fully protected a tract 25 miles wide on either side of it. But when failure of crops has been accompanied, as so often happens, by failure of pasture, the cattle either die or are driven away in search of food, and local means of carriage are non-existent. In such cases feeder lines, acting as minor distributaries to the main lines, may be of the greatest protective value.

4. Her Majesty's Secretary of State has laid down that the fact that any railway opens up a grain-producing tract and connects it with tracts that are liable to failure of crops, thus securing to them a food-supply in the event of famine, does not *necessarily* "entitle it to rank as a protective railway." But it does not therefore seem necessary to exclude altogether from consideration railways which are protective only in the sense that they bring grain from producing tracts to a convenient centre for distribution to tracts exposed to scarcity. The Famine Commission clearly considered

that such railways might be of great protective value. The collection of grain must precede its distribution. No doubt collection at the local marts proceeds quietly and incessantly, even in the absence of a railway, while distribution in the presence of famine is urgent. Thus provision for distribution should ordinarily precede provision for collection. But a point must be reached at which it is more important to develop existing means of collection than existing means of distribution.

5. I am to ask that the Government of India may be furnished with a list of a limited number of railway projects for the Madras Presidency arranged in order of protective value with reference to the foregoing remarks. In order to enable the Government of India to judge of the relative claims of projects for different Provinces, the grounds on which each work is believed to be protective should be stated with some fulness, the following information being given in each case, together with any other that may be relevant, regarding the tract of country which it traverses: population per square mile (*a*) rural and (*b*) total; percentage of area cultivated; percentage of cultivation irrigated from (*a*) canals, (*b*) permanent wells, (*c*) other sources of irrigation; average rainfall; maximum and minimum rainfall; previous famine history, with details of the expenditure that has been incurred for the relief of distress. In case the project should fall under paragraph 4 of this letter, similar information should be given regarding the tract which it is intended to supply.

6. In conclusion I am to explain that the information now called for is quite distinct from that asked for by the Supreme Government in the Public Works Department, in Mr. Hebbert's letter No. 971-R.C., dated the 14th August 1895.

Order—Mis. No. 4403, Revenue, dated 5th November 1895.

Referred to the Board of Revenue (Revenue Settlement, Land Records and Agriculture), for report.

(True Copy and Extract.)

(Signed) E. GIBSON,
Secretary to Government.

To the Board of Revenue (Revenue Settlement, with copy of Land Records and Agriculture), Public Works Department resolution, to be returned.

Read—also the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), No. 397, dated 25th May 1897:—

Read—again the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), No. 403, dated 20th December 1895:—

Read—G.O., Mis. No. 4403, Revenue, dated 5th November 1895.

Resolution—No. 403, dated 20th December 1895.

Communicated to all Collectors (except Malabar, South Canara, Nilgiris and Madras) for report as to what extensions (if any) of railway communication for protective purposes appear to them necessary or desirable.

The information required by the Government of India in paragraph 5 of its letter should be given as far as possible for each project recommended.

(True Copy and Extract.)

(Signed) P. RAJARATNA MUDALIYAR,
Secretary.

To the Collectors of all districts (except Malabar, South Canara, Nilgiris and Madras).

Read—also the following reminders from Government, Revenue Department, directing an early submission of the report called for regarding protective railways:—

Government Order, No. 1994-R., Revenue, dated 27th October 1896.
Government Order, No. 801-R., Revenue, dated 23rd April 1897.

Resolution—No. 397, dated 25th May 1897.

The information asked for in paragraph 5 of the letter from the Government of India, communicated with the first Government Order read above, is furnished in Appendices I, II, III and IV to this Resolution.

2. A list of protective railways arranged in the order of their protective value, with reference to the aforesaid appendices is subjoined, and their position in relation to the existing lines is shown in the accompanying map.

Protective railways.		Tract traversed.		
Serial number.	Designation.	Districts.	Groups of taluks (within British territory).	Principal villages or towns.
1	2	3	4	5
I.	Hospet-Harihar	Bellary Mysore Province	Hospet Kúdligi Hadagalli Harpanahalli	Chittavadigi. Narávanadévarakéri. Kottúr. Arasikere. Harihar.
II.	Bellary-Rayadrug-Holalkeri.	Bellary	Bellary Rayadrug	Bellary. Hiréhálu. Rayadrug. Chittaldrug. Holalkeri.
III.	Dhone-Kurnool	Kurnool	Ramallakóta Nandikótkúr *	Dhonu. Veldurti. Chinna Tékúru. Kurnool. Giddalúr.
IV.	Giddalur-Vantimitta.	Kurnool Cuddapah	Cumbum Badvél Siddhout	Narava. Rájupalem. Idamankallu. Komaravolu. Sancherla. Sankhavaram. Pórumámilla. Boppapuram. Pedullapalli. Badvél. Bayyanapalli. Venkatasettipalli. Konduru. Siddhout. Vantimitta.
V.	Kalikiri-Yerraguntla-Nandyal.	Kurnool Cuddapah	Vayalpad Rayachóti Pulivendla Cuddapah Proddatúr Jammalamadugu * Koilkuntla Sirvel * Nandyal	Kalikiri. Kalakada. Rayachóti. Lakkireddipalli. Surabhu. Vémpalli. Yerraguntla. Jammalamadugu. Nossam. Kóilkuntlá. Róvanuru. Nandyal.
VI.	Morappur-Hosúr-Bangalore.	Salem Mysore Province	Uttankarai Dharmapuri Krishnagiri Hosúr	Morappúr. Dharmapuri. Pálakódu. Rayakottai. Kelámangalam. Hosúr. Bangalore.
VII.	Salem-Porto-Novo.	Salem South Arcot	Salem Attúr Kállakkurichi Vriddháchalam Chidambaram	Salem. Attúr. Chinnasalam. Vriddháchalam. Bhuvanigiri. Porto Novo.
VIII.	Salem-Námakkal-Karúr.	Salem Coimbatore	Salem Tiruchengodu Námakkal Karúr	Salem. Rásipur. Tattaiyangarpatti. Námakkal Nanjai Mohanur. Nerur. Karúr.

* Though not traversed by the railway, part of the taluk will be protected, being within 25 miles of the line.

Protective Railways.		Tract traversed.		
Serial number.	Designation.	Districts.	Taluks.	Principal villages or towns.
1	2	3	4	5
IX.	Pódanúr-Dindigul	Coimbatore Madura	Coimbatore Pollachi Udumálpet Dharápuram * Palni Dindigul	Pódanúr. Kinattukkadavu. Vijaya Po Udumálpet. Madathukolam. Palni. Virupákshi. Palaganúti. Dindigul.
X.	Madura-Pamban	Madura	Madura Sivaganga Rámnad	Madura. Tiruppuvanam. Sivaganga. Mánamadurai. Paramakudi. Rámnad. Pamban.
XI.	Kóilpatti-Adirámpatnam-Muttupet.	Tanjore Madura Tinnevelly	Pattukkóttai Sivaganga Rámnad Ottappidáram Sattur	Adirámpatnam (near Muttupet). Avadayarkoil. Devakota. Terruvumpet. Ilayankudi. Paramakudi. Abhiramam. Kamuti. Ettiyápuram. Koilpatti.
XII.	Trichinopoly Pudukkóttai-Tóndi.	Trichinopoly Madura	Trichinopoly Pudukkóttai Sivaganga Rámnad	Trichinopoly. Pudukkottai. Tirumayam. Kanadukattan. Karaikkudi. Devakota. Tiruvadanai. Tóndi.
XIII.	Pondugal-Narasaraopet-Chirala.	Kistna Nellore	Palnad Sattanapalle Narasaraopet Vinukonda * Bápatla Ongole *	Pondugala. Dáchépalli. Pidugurála. Nekarikallu. Narasaraopet. Chilakalurpeta. Chirala. Kokarakulam.
XIV.	Tinnevelly-Nagarkoil.	Tinnevelly Travancore	Tinnevelly Ambásamudram * Srivaikuntam * Nánguneri	Nánguneri. Valliyur. Panakkudi. Nagerkoil.
XV.	Vizianagaram-Sálúru-Raipur.	Vizagapatam Central Provinces	Vizianagram Gajapatinagram Sálúru	Vizianagram. Gajapatinagram. Sálúru. Raipur.
XVI.	Bezwada-Masulipatam.	Kistna	Bezwada Gudiváda Bandar	Bezwada. Masulipatam.
XVII.	Tinnevelly-Quilon.	Tinnevelly Travancore	Tinnevelly Ambásamudram Tenkási	Tinnevelly. Shérmádévi. Ambásamudram. Tenkási.
XVIII.	Chinna Salem-Tirukkóyilúr.	South Arcot	Kallakurichi Tirukkóyilúr	Chinnasalem. Kachirayapalaiyam. Sankarápuram. Tirukkóyilúr.
XIX.	Panruti-Kachirayapalaiyam.	South Arcot	Cuddalore Vriddháchalam Tirukkóyilúr Kallakurichi	Panruti. Ulundurpettai. Elavanasur. Tyaga Durgam. Kachirayapalaiyam.
XX.	Tindivanam-Tiruvannámalai-Samalpatti.	South Arcot Salem	Tindivanam Tiruvannámalai Uttankari	Tindivanam. Gingee. Tiruvannámalai. Uttankarai. Samalpatti.

* Though not traversed by the railway, part of the taluk will be protected, being within 25 miles of the line.

3. Of the lines mentioned above, Nos. XVI and XVII are protective, only in the sense that they will serve to bring the produce of fertile tracts to convenient centres, viz., Bezwada and Tinnevelly, for distribution to affected tracts.

4. A few notes regarding the proposed protective railways are subjoined :—

I. *Hospet-Harihar.*—Kúdligi, Hadagalli and Harpanahalli taluks in this group have very bad unmetalled roads without culverts. In times of famine, it is difficult to bring grain into this area. Large tracts are over 40 miles from the nearest railway. In the famine of 1876—78, these tracts were the first to suffer. From the map in appendix R to the review of that famine, it will be seen that they were among the taluks which suffered most. In this tract, irrigation works are few, and protect only small areas, and, so far as is known, there is not much scope for their development. A very large proportion of the arable land still lies unoccupied, so that if the country be opened up by a railway, it may be developed considerably. The line is likely to be a success even from a commercial point of view. Hospet is the market for such produce of the western half of the Bellary district as seeks an outlet on the Bellary-Dhárwár branch of the Southern Mahratta Railway. Náráyanadévarakéri, District Munsif's head-quarters, 8 miles from Hospet, Kottúr, 26 miles further off, whose exports of cotton to Davanagiri, near the terminus of the proposed line, are valued by the Mysore Government at 4 lakhs of rupees, and Arasikeri, 14 miles further off, a centre for the jaggery trade, are important places situated on the line. Near Kottúr, the line taps the large toddy-producing tract in Kúdligi taluk.

II. *The Bellary-Ráyadrug-Chittaldrug-Holalkeri line.*—Ráyadrug ordinarily draws its food-supply from the Chittaldrug district and Dharmávaram and Madakasíra taluks of Anantapur district. In times of scarcity, however, that taluk gets no supplies from those parts but looks to Bellary for a supply which can be effectively given only in the event of this line being constructed. The country through which the line will pass is sparsely peopled and poor.

III. *The Dhone-Kurnool Railway.*—The tract protected by this line comprises Rámallakóta and Nandikotkúr taluks, in which 35 and 29 per cent. of the population of 1871 has disappeared when the succeeding census was taken. The tract is liable to great and frequent deficiencies of rainfall, and, though a considerable area in the Nandikotkúr taluk is commanded by the Kurnool-Cuddapah canal, that work has never been fully utilized, and the area commanded lies about 30 to 40 miles east of the line suggested. The numbers of people relieved during the famine of 1876—78 at the relief camp at Dinne-Dévarapad situated on this line were much larger than those at other camps. In point of village relief also, Rámallakóta taluk needed relief to a greater extent than the other taluks, the number of villages in Rámallakóta taluk where relief was given being 54 against thirteen in Cumbum, twelve in Nandikotkúr, fourteen in Pattikonda, and five in Nandyal. During the scarcity of 1891-92, twenty-three villages along the Bellary high road in Rámallakóta taluk and twelve villages in the extreme south of the Nandikotkúr taluk, all of which are within 25 miles of the proposed line, suffered severely.

IV. *Giddalur Vantimitta.*—Badvél taluk is remote from a railway, and all the taluks of the group suffered severely during the famines of 1876-78 and 1891-92. There is no doubt regarding the very great protective value of the line. It may not be financially successful. The tract of country through which the line would pass is hilly, poor, and sparsely peopled. The traffic is poor. A large portion of the tract consists of wild forest-clad hills.

V. *The Kalikiri-Yerraguntla and Nandyál Railway.*—This line, by connecting the Villupuram-Dharmávaram line with the Madras Railway, will open up a tract which is probably more subject to famine than any other, and which is beyond the reach of the existing railways. It will serve about one-third of the Váyalpád taluk, the whole of Ráyachóti taluk, the eastern portion (about one-half) of Pulivendla and the western portion (one-third) of Cuddapah taluk. The Ponnéru can be more cheaply and easily bridged over at Jammalamadugu, where it is comparatively narrow, than at Proddatúr. But Proddatúr, being one of the most important centres of trade, it is desirable that the line should pass through that town. The Koilkuntla taluk, which is at present remote from any railway, suffered severely in the famine of 1876—78 as well as in that of 1891-92.

VI. *Morappúr-Hosúr-Bangalore.*—The tract which suffered most in the Salem district during the famine of 1876—78 consisted of the taluks of Hosúr, Krishnagiri, Dharmapuri and Uttangarai. The percentage of cultivation to the total area as well as that of the cultivated area irrigated from canals and wells is very small. Almost the whole cultivated area depends on timely rains for cultivation.

VII. *The Salem-Porto Novo line.*—This will afford the protection which is very much needed by Vriddháchalam and Kallakurchi. The western parts of these taluks are mostly dry and liable to severe drought. The westernmost villages in Vriddháchalam taluk are 55 miles off from the nearest railway station (Chidambaram) on the east and 45 miles off from the nearest railway station (Salem) on the west. This line by connecting the Atúr taluk, which is fairly protected by irrigation works, would greatly facilitate the exportation of grain therefrom to Salem, Dharmapuri and other poor tracts on the west and to Vriddháchalam and Kallakurchi on the east. The Chidambaram taluk, which the line would tap towards its terminus, would better serve the poorer taluks in the west with its supplies of rice than now. This line would open up a tolerably densely populated tract in South Arcot and Salem, and connect the centre of the latter district with the surplus grain-producing deltas of the Vellár and the Cauvery. The area through which the railway would pass has not in recent times suffered greatly from famine, but the Salem district itself is always liable to famine, and this line would greatly shorten the carriage of food to that area. In the interest of the general development of the country and of trade, the construction of such a railway is much to be desired. It would greatly shorten the distance to the coast from the Salem district.

VIII. *The Salem-Námakkal-Karúr Railway.*—The General Charge Deputy Collector writes "Námakkal taluk suffered much from the effects of the great famine of 1876—78. Several hundreds of lives were lost and lakhs of rupees were spent on the relief of sufferers. The distress of 1891-92 did not deepen into famine, but the few hundreds who needed relief emigrated to Salem and Tiruchengódu where relief works were opened."

IX. *The Pódamúr-Dindigul Railway.*—This line would open up a very dry portion of the Coimbatore and Madura districts and would connect them with the West Coast on the one hand and the rice-producing tracts of Trichinopoly, Tanjore and Madura on the other. Excluding hills and forests, nearly the whole of the arable area in Polláchi taluk and 98 per cent. of the arable area in Udamalpet taluk are occupied, but 80 per cent. of the occupied area in Udamalpet and 90 per cent. of such area in Polláchi depend on timely rainfall alone for cultivation. The line would be of great value to the planters who are likely to take up land on the Anamalais. Palni is mainly a dry taluk and the failure of a single monsoon brings immediate distress on the ryots. It is bounded by dry taluks on the north and west and is very far from any railway. The taluk suffered very severely from drought in 1893. The proposed diversion to Dhárápuram is considerably off the direct line between Polláchi and Dindigul. The diversion, if made, would protect the drier regions of the Dhárápuram taluk and open up the irrigated parts of the taluk for the benefit of the precarious parts traversed by the line.

X. *The Madura-Pámban line.*—No proof is needed, the Collector says, of the liability of Rámnad to recurring famines. In 1866-67 the Rámnad and Sivaganga zamindaris were severely affected with famine. One relief-house in Pámban and six relief-houses in Sivaganga were opened. Rs. 997 were spent in Rámnad zamindari on g atuitous relief for eleven months up to June 1867 and 284 people on the average per day were relieved in October 1866. In Sivaganga Rs. 1,886 were spent on gratuitous relief up to 9th November 1866 and the total number so relieved up to 5th October 1866 was 47,908. During the famine of 1876-78, Rs. 8,899 were spent on relief-works and Rs. 69,184 on gratuitous relief in Rámnad and Rs. 1,08,862 on gratuitous relief in Sivaganga. The average daily number relieved by employment on works was 1,471 in Rámnad and 392 in Sivaganga, and the number relieved gratuitously was 3,588 in Rámnad and 3,686 in Sivaganga.

XI. *The Koilpatti-Paramagudi-Dévakóta-Adirámpatnam (Máyavaram-Muttupet Railway Extension).*—The Ottappidáram taluk suffered severely in the famine of 1876—78. This line would afford great facilities for the distribution of grain in the taluk. The Collector of Madura proposes that this line, after meeting the Madura-Pámban line at Paramagudi, should be taken through Terruvumpet to Dévakóta, where it is to intersect the Pudukkóttai-Tondi line, and is to be continued thence to Avadaiyárkoil and Adirámpatnam and Muttupet. The Collector of Madura considers this line as of greater protective value than the Madura-Pámban line.

XII. *The Trichinopoly-Pudukkottai-Tondi line.*—The Dewan of Pudukkóttai says in his memorandum regarding this line that in the tract to be traversed by it, the roads to and from the railway stations and coast towns are sandy, rugged and unsafe and that the transport of the necessaries of life is consequently very much retarded in times of scarcity.

XIII. *The Pondugál-Narasaraopet-Chírála line.*—This is the section within British territory, of a branch line which His Highness the Nizam's Government proposes to run from the Hyderabad-Manmad Railway to meet the Southern Mahratta Railway. The line may be extended to Chírála on the Madras-Bezwada Railway. The question is whether the place of junction with the Southern Mahratta Railway should be Narasaraopet or Nandyal. The advantages of the former over the latter as the point of junction are (1) that the Hyderabad-Narasaraopet route offers greater engineering facilities, especially as regards the bridging of the Kistna, which is narrow, with a rocky bed at Pondugál, where the line enters the British territory; (2) that the said route would protect, in British territory, a large area in Palnad, Sattenapalle and Narasaraopet taluks, which are more precarious than Nandikotkur and Nandyal taluks, through which the line would pass if the junction were at Nandyal, and (3) that the Hyderabad-Narasaraopet line is essential to the success of certain irrigation projects, whereby 14,700 acres are expected to be brought under irrigation, and (4) that the region within the Hyderabad territory traversed by the line running to Narasaraopet is more productive than the corresponding region traversed by the line running to Nandyal. The Collector suggests that the line be extended to Chírála on the Madras-Bezwada Railway. In that case a large area in Narasaraopet taluk and a small area in Ongole taluk will also be protected. The distance from Madras to Hyderabad will be diminished by 164 miles.

XIV. *The Tinnevelly-Nagerkoil line.*—The Nángunéri taluk is liable to drought, frequently necessitating the grant of large remissions of land revenue, and contains large areas of very inferior dry land. The proposed line would be of great value for distributing supplies of grain within the taluk. The taluk has been getting its food supply from the port of Kulasékarapatnam with great difficulty, by means of pack bullocks, across the intervening sandy tracts. A part of the Srívaikuntam taluk which is near the line is fairly irrigated, and would contribute to Nángunéri the supply she needs in times of scarcity. Nagerkoil, the terminus of the proposed line, is a place of great commercial importance. It would be advantageous to extend the line to Trivandrum which is, however, not quite necessary from a purely protective standpoint.

XV. *The Vizianagram-Raipur Railway.*—The first section of the line, about 35 miles in length, from Vizianagram to Sálúru, close by the foot of the Pottangi ghaut, will doubtless be of great protective value; for, in the event of a famine in Vizagapatam, Ganjám or Orissa, it will help to throw on the market the large supplies always available in the Agency tracts. For 70 miles beyond Sálúru, the road to the Central Provinces runs across the main chain of the ghauts and the Koraput plateau—a country from which no large amount of assistance could be obtained in the event of a scarcity. The road then enters, however, a magnificent rice country, with unfailing rainfall, heavy enough to ensure good crops in the worst season without the aid of artificial irrigation. The tract appears to extend far into the Central Provinces. The rice-producing area in the tract is estimated by the Collector of Vizagapatam at about 80,000 acres. The area might be doubled if a demand arose for the produce. In 1891, when the Vizagapatam district experienced the greatest failure of the monsoon and loss of crop since 1835, the Agency tracts poured down 50,000 cart-loads of foodstuff during

the critical months, so that an unprecedented loss of crops was got over without severe distress. The source of supply is, however, liable to great drawbacks, viz., the excessive cost of cartage and the want of food for draught cattle between the Jeypore plateau and the East Coast. This was very keenly felt in 1891–92. A railway from Vizianagaram to Sálúru, the Collector says, would reduce the cost of cartage and the fodder difficulty by one-half.

XVI. *The Bezwada-Masulipatam Railway.*

XVII. *The Tinnevelly-Quilon Railway.*

Though the tracts of country through which these two lines would pass are entirely free from any risk of famine, they are very productive, and would, by being connected by the proposed lines with tracts liable to failure of crops, render those lines very valuable from a protective point of view. The financial prospects of the lines are also good.

5. Besides the above, the undermentioned lines, which are not so necessary as the above in the near future, are also proposed and numbered in continuation of the abovementioned lines:—

XVIII. *A line branching at Chinna Salem from the Salem-Port Novo line to Tirukkóyilúr.*

XIX. *A line from Panruti to Kachirayapalayam.*

These two lines will protect the backward parts of Vriddháchalam, Kallakurchi and Tirukkóyilúr taluks.

XX. *A feeder line from Tindivanam to Tiruvannámalai and thence to Sómalpatti in the Uttangarai taluk.*—The Collector of South Arcot says that the Tindivanam-Tiruvannámalai line will serve about 250 villages in the western half of Tindivanam taluk, which are dry and hilly and whose tanks are all rainfed. This part of the country measures 50 miles north to south.

6. *The Erode-Nanjangodu line and the Erode-Méttupálaiyam line*, which have been proposed, are of little protective value, the former line passing through scantily peopled parts and the latter, through parts which, being within 25 miles of the Madras Railway, are to be considered as already protected.

(True Copies and Extract.)

(Signed) R. V. SRINIVASIAR,
Secretary.

To the Secretary to Government, Revenue Department,
with two copies of a map.

Copy to all Collectors, except Malabar, South Canara,
Nilgiris and Madras.

APPENDIX I.

The history of previous famines in the districts which would be traversed by the proposed protective railways.

1. *Bellary—Groups of Taluks Nos.* 1 *and* 2 (*vide* column 4 of the statement subjoined to paragraph 2 of the Proceedings). The earliest famine recorded in the old district of this name, which included the present Anantapur district, was that of 1792–93; and since the commencement of the present century there have been famines in 1803, 1824, 1833, 1853–54, 1866, 1876—78, 1891–92 and in 1896–97. The district suffered severely during the famines of 1824 and 1833. The famine of 1854 was also very severe; for about nine months, more than 50,000 people, including those that flocked in from the Nizam's territory, obtained relief by employment on works. In the famine of 1866–67, 10,422 persons were employed on works and 13,130 were relieved gratuitously on the average during eleven months, the maximum reached in any one month being 3·2 per cent. of the population. In the famine of 1876—78, the average number of persons relieved in the taluks now forming the Bellary district during 22 months from December 1876 to September 1878 was 147,653, of whom 99,521 were employed on works and 48,132 relieved gratuitously. The maximum number relieved in any one month was in August 1877, when 50·99 per cent. of the population in 1871 were in receipt of relief. In the famine of

1891-92 distress was not severely felt in the area comprised in group No. 1. In the area comprised in group No. 2, relief had to be provided for ten months ending September 1892 in the Bellary taluk, and for five months ending April 1892, in Rayadrug. In the first-mentioned taluk an average number of 1,543 people were employed on works during ten months, and 5 relieved gratuitously for three months; in the 2nd, 184 persons were, on the average, employed on works.

2. *Kurnool and Cuddapah—Groups Nos.* 3, 4 *and* 5—*Group No.* 3.—Since the beginning of the century, the Kurnool district has suffered nine times from famine, viz., in the years 1804, 1810, 1824, 1833, 1853-54, 1866, 1876—78, 1891-92 and in 1896-97. In 1873-74 parts of the district suffered and in 1884 there was distress over eight large area. The district suffered severely from the famine of 18 3 and to some extent from that of 1854, but no figures are available as to the numbers of people relieved on these occasions. During the famine of 1876—78, the average number of persons relieved was 107,069 on works and 32,956 gratuitously for a period of 22 months. In 1892 the average number of persons relieved on works in the Rámallakót taluk for eight months ending July 1892 was 903, while in the Nandikotkar taluk, where relief works were commenced a month later, it was 344.

Group No. 4.—In the Cumbum taluk, the famine of 1891-92 was very severely felt. The average number of persons relieved by employment on works for the eleven months ending September 1892 was 5,845, while on the average 211 persons were gratuitously relieved at kitchens during ten months. Between the years 1800 and 1802 considerable distress prevailed in the Cuddapah district where there were also famines in the years 1823-24, 1833 and 1876—78. In the famine of the years last mentioned, the district including the taluks of Badvel and Sidhout suffered most acutely. The famine of 1891-92 was also severe. During the famine of 1876—78, 57,760 persons were, on the average, employed on works for 22 months ending September 1878 and 30,173 men, on the average, relieved gratuitously, the maximum relieved in one month, *i.e.*, in September 1877, being nearly 22 per cent. of the population in 1871. But information in detail of taluks is not available. Badvel is one of the taluks most seriously affected by the famine of 1891-92. In this taluk an average number of 2,660 persons were employed on works for eight months ending August 1892, while on an average 12 persons were gratuitously relieved at kitchens for six months ending the same period. In the Sidhout taluk 323 persons were, on the average, employed on works for the first seven months of 1892.

Group No. 5.—In the famine of 1876—78, all the taluks included in this group suffered severely. In the famine of 1891 and 1892, relief operations were conducted in five out of the nine taluks. Though the Kurnool-Cuddapah canal passes through several taluks of this group, it affords but slight protection, as the soil is to a great extent unfit for irrigation. Koilkuntla taluk suffered very severely during the famines of 1876—78 and 1891-92.

3. *Salem and South Arcot—Groups Nos.* 6, 7, 8, 18, 19 *and* 20.—In the Salem district there was famine during the years 1833 and 1866-67, 1876—78 and in 1891-92. In the famine of 1866-67, an average number of 420 people were employed for nine months on works and 3,345 relieved gratuitously. During the famine of 1876—78, an average number of 37,375 persons were, for 22 months, employed on works and 59,634 relieved gratuitously, but details for taluks are not available. During the distress of 1891-92, relief was given in Tiruchengodu, Dharmapuri, Salem and Uttankarai taluks. In the first mentioned taluk, 4,223 persons were on the average on relief works for a period of eleven months, while in the other taluks, similar works were opened for short periods. The average number relieved gratuitously was 125 for eleven months in Tiruchengodu and 99 for nine months in Salem.

The South Arcot district is liable to floods and drought. In 1806-7, Government imported grain on a large scale, opened relief works and remitted a large amount of revenue. There was distress in 1823—25, and in 1833-34, 18,000 persons were employed on Government relief works and large remissions were granted. In 1866 relief works were again opened, and nearly 2,064 people had to be relieved for seven months. In 1877, the severest famine from which the district has ever suffered occurred, and on the average 1,015 persons were employed on works and 21,356 relieved gratuitously for twenty months. Information in detail of taluks is not available.

4. *Coimbatore—Groups Nos.* 8 *and* 9.—Since the beginning of the century, not less than two-thirds of the seasons have been unfavourable and many almost calamitous; noticeable were, 1804-5, 1806-7 and 1810-11. In 1833 there was famine. The year 1836-37 closed a series of twelve bad seasons, continuous but for 1835-36; while 1857 closed likewise a series of five very dry and unfavourable years. In 1861 and 1866, there was again a partial famine. The average number of people relieved during eight months from August 1866 to March 1867 was 1,802 or 0·13 per cent. of the population, of whom 575 were employed on works and 1,227 were relieved gratuitously. The maximum number relieved during any month was 3,146 and that was in November 1866. During the great famine of 1876—78 the average number relieved during 22 months from December 1876 to September 1878 was 59,053 or 3·35 per cent. of the population in 1871. Of this number, 24,903 were employed on works and 34,150 relieved gratuitously. The maximum number relieved during any one month was 234,081 or 13·28 per cent. of the population in September 1877. During the distress of 1891, an average of 2,426 persons received

relief on works, while at relief kitchens which were opened for only four months, but continued for another month up to January 1892, the average number relieved amounted to 517. The maximum number relieved in any one month in all the affected taluks of the district was 7,377 in September 1891, or 0·48 per cent. of the population.

5. *Madura—Groups Nos.* 9, 10, 11 *and* 12.—Madura does not, so far as information is available, appear to have suffered seriously in any famine previous to 1865. During the famine of 1866-67, the average number of people who were employed on works in the whole district for eleven months was 1,378, while 2,912 were relieved gratuitously. The famine of 1876—78 was not so severe in the district as in several other parts of the Presidency, though in the whole district, 7,884 persons were relieved on works for nineteen months and 19,514 received gratuitous relief during the same period. It will be seen from the map in appendix R to the review of the Madras famine of 1876—78, that the tracts which will be traversed by the Koilpatti-Adirampatnam-Muttupet Railway were among the most affected areas in the southern districts.

6. *Tanjore—Group No.* 11.—The Tanjore district is for the most part secure from famine but in the non-deltaic taluk of Pattukkóttai, only a small portion of the crop is protected in seasons of drought. As regards the history of famines, prior to that of 1866, the information available is meagre. In that famine, the distress was considerable in those parts where dry cultivation was carried on; and 3,141 persons on the average were relieved gratuitously during seven months ending January 1867. In the famine of 1876—78, 1,726 people were, on the average, employed on works and 11,676 were relieved gratuitously for three months. In the early portion of 1892, considerable anxiety was felt regarding the condition of the Pattukóttai taluk, in which as well as in the adjoining parts of the Madura district, there had been widespread loss of crop. The people however found employment in the delta. Very little information is on record regarding the Pudukkottai State and the large zemindari area which occupies the north-eastern part of the Madura district, but the condition of the whole of this tract during 1892 was such as to give rise to great anxiety.

7. *Tinnevelly—Groups Nos.* 11, 14 *and* 17.—There is no record to show that the district ever suffered from famine though during a portion of the years 1876—78 a small number of people were on relief and in the early months of 1891 there was some distress and a few works were started to afford relief to the labouring poor.

8. *Kistna and Nellore—Groups Nos.* 13 *and* 16.—Of the districts that suffered from serious dearth between November 1790 and November 1792, Kistna was one where deaths from starvation were most numerous. In 1823-24 the district again suffered severly and public employment was provided for the relief of the distressed. In 1832—34 the "Guntúr" famine occurred, which covered the country with human bones from Ongole to Masulipatam and reduced the area of cultivation to the lowest limit. A large expenditure was incurred on works and relief depots were also opened. This famine led to the construction of the Kistna anikat which has brought a large portion of four taluks under irrigation. Since then, the district has for the most part escaped from famine, but in 1876—78, it suffered from the great famine, when the average number of persons relieved during 22 months from December 1876 to September 1878 was 4,852 or 0·3 per cent. of the population in 1871. Of these 2,044 were relieved gratuitously and 2,808 were employed on works. The maximum number relieved in any one month was 25,095 in September 1877. In 1892 some anxiety was felt regarding the upland portion of the district on the south-western frontier adjoining Kurnool and Nellore. Palnad and parts of the adjoining taluks suffered, but not to the extent of necessitating relief operations.

The Nellore district, with a scanty rainfall, limited means of irrigation, and the general prevalence of poor soils is always exposed to famine. In the years 1805—7, 1823-24, 1832—34, 1876—78 and in 1891-92 the district suffered from famine. The average number of persons relieved during the famine of 1876—78 was 40,826 on works and 11,877 gratuitously, in the district, as a whole. Information regarding the number relieved in the Ongole taluk alone is not available. In 1892, 584 persons were on the average employed on works in that taluk for eight months ending August of that year.

9. *Vizagapatam—Group No.* 15.—This district suffered from a serious famine between November 1790 and November 1792. In April 1791 it was reported that 1,200 persons had died from starvation in the neighbourhood of Vizagapatam. During this period import and transit duties on grain and provisions were suspended and grain was distributed by Government. In 1824 distress was so great and prices so high that people were selling their infant children. A relief depot was accordingly sanctioned, though never opened owing to an improvement in the season. The great "Guntúr" famine of 1833 scarcely affected this district although the Orissa famine of 1865-66 did to some extent. In 1876—78, considerable distress was felt from high prices; but this was overshadowed by the more intense distress of the southern districts. The average number of persons relieved during six months from October 1877 to January 1878 and again in August and September 1878 was only 1,847. Of these 1,552 were employed on works and 295 were relieved gratuitously. In 1889, the year of the last Ganjám famine, the district escaped, chiefly owing to the proximity of the Gódávari district where there is always a large demand for labour in the hot weather.

APPENDIX II.

STATEMENT showing the expenditure on account of relief during past famines and the average number of people relieved during the famine of 1891 and 1892 in taluks traversed by protective lines of railway.

Number and designation of protective railway.	Tract traversed.		Expenditure during the famine of 1876–78.						Expenditure during the famine of 1891–92						Number relieved in the famine of 1891–92.					
			On relief works.		Gratuitous relief.		Total.		On relief works.		Gratuitous relief.		Total.		On relief works.			Gratuitous relief.		
	District.	Taluk.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	MONS.			MONS.		
I. Hospet-Haribar.	Bellary ..	Hospet ..	6,10,532	6 8 7	1,28,815	1 6 1	7,39,347	7 14 8	..	..	..	..	..	..	5	177	1·9	..	..	..
		Kúdligi ..	4,14,226	4 7 1	2,32,388	2 8 0	6,46,614	6 15 1	..	..	..	..	..	..	..	..	..	..	..	..
		Hadagalli ..	5,24,521	5 13 9	1,55,701	1 11 10	6,80,222	7 9 7	..	..	..	..	..	..	..	..	..	..	..	..
		Harpanahalli ..	2,82,304	3 4 8	2,16,342	2 8 5	4,98,646	5 13 1	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	18,31,583	5 0 11	7,33,246	2 0 5	25,64,829	7 1 4	..	..	..	..	..	..	..	177	0·5	..	..	..
II. Bellary-Rayadrug-Holalkeri.	Bellary ..	Bellary ..	16,38,822	8 15 10	3,19,375	1 12 0	19,58,197	10 11 10	39,863	0 3 7	..	..	39,863	0 3 7	10	1,543	8·6	3	5	0·03
		Rayadrug ..	5,49,963	6 4 3	1,77,819	2 0 5	7,27,782	8 4 8	1,713	0 0 3	..	..	1,713	0 0 3	5	184	1·9	..	..	..
		Total ..	21,88,785	8 1 8	4,97,194	1 13 5	26,85,979	9 15 1	41,576	0 2 4	..	..	41,576	0 2 4	..	2,727	9·8	..	5	0·02
III. Dhone-Kurnool.	Kurnool ..	Rámallakóta ..	17,05,800	11 10 8	2,17,669	1 7 10	19,23,469	13 2 6	9,137	0 1 2	..	..	9,137	0 1 2	8	903	7·2	..	..	..
		Nandikotkur ..	6,65,850	6 8 7	1,74,634	1 11 5	8,40,484	8 4 0	6	..	..	..	6	..	7	344	3·9	..	..	..
		Total ..	23,71,650	9 8 11	3,92,303	1 9 4	27,63,953	11 2 3	9,143	0 0 8	..	..	9,143	0 0 8	..	1,247	5·8	..	..	..
IV. Giddalúr-Vontimitta.	Kurnool and Cuddapah.	Cumbum ..	13,66,432	11 1 8	3,19,126	2 9 6	16,85,558	13 11 2	45,987	0 6 3	1,668	0 0 3	47,655	0 6 6	11	5,845	49·7	10	211	1·8
		Sidhout ..	1,17,238	1 8 5	17,295	0 3 7	1,34,533	1 12 0	*1,700	0 0 5	..	..	1,700	0 0 5	7	323	4·8	..	..	..
		Badvel ..	3,98,687	4 4 6	1,69,346	1 13 1	5,68,033	6 1 7	16,152	0 2 9†	147	..	16,299	0 2 9	8	2,660	28·5	6	12	0·13
		Total ..	18,82,357	6 6 10	5,05,767	1 11 8	23,88,124	8 2 6	63,839	0 3 8	1,815	0 0 1	65,654	0 3 9	..	8,828	31·8	...	223	0·8
V. Kalikiri-Yerraguntla-Nandyal.	Kurnool and Cuddapah.	Pulivendla ..	4,46,345	4 0 8	1,78,931	1 9 11	6,25,276	5 10 7	..	..	..	..	..	..	..	..	..	..	..	..
		Rayachóti ..	3,72,215	2 14 6	2,04,579	1 9 6	5,76,794	4 8 0	17,690	0 2 7	1,882	0 0 4	19,572	0 2 11	16	1,280	11·3	3	8	0·06
		Vayalpad ..	6,20,053	4 4 1	2,24,705	1 8 8	8,44,758	5 12 9	1,057	0 0 2	50	..	1,107	0 0 2	8	451	3·5	3	53	0·3
		Cuddapah ..	3,57,858	2 3 1	87,730	0 8 7	4,45,588	2 11 8	2,932	0 0 4	..	..	2,932	0 0 4	3	108	0·7	..	..	..

* Reported in B.P., No. 5482, dated 17th July 1897, to refer to gratuitous relief, but now shown under "relief works" as it appears from the Famine report that no gratuitous relief was given in that taluk.
† The figure 0-3-0 reported in the above Proceedings has now been corrected.

Statement showing the expenditure on account of relief during past famines and the average number of people relieved during the famine of 1891 and 1892, &c.—*cont.*

Number and designation of protective railway.	Tract traversed.		Expenditure during the famine of 1876—78.						Expenditure during the famine of 1891–92.						Number relieved in the famine of 1891–92.					
			On relief works.		Gratuitous relief.		Total.		On relief works.		Gratuitous relief.		Total.		On relief works.			Gratuitous relief.		
	District.	Taluk.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	MONS.			MONS.		
V. Kalikiri Yerraguntla-Nandyal—*cont.*	Kurnool and Cuddapah.	Sirvel	6,50,960	9 2 6	1,09,495	1 8 8	7,60,455	10 11 2	..	..	..	..	..	..	..	..	..	..	..	..
		Nandyal ..	10,93,534	10 3 0	1,72,879	1 9 9	12,66,413	11 12 9	..	..	..	..	..	..	3	110	1·1	..	..	..
		Koilkuntla ..	9,59,456	9 11 3	84,985	0 13 9	10,44,441	10 9 0	34,400	0 6 4	..	..	34,400	0 6 4	8	1,891	21·8	5	41	0·4
		Jammalamadugu	4,75,793	4 5 2	1,27,684	1 2 7	6,03,480	5 7 9	..	..	..	..	..	..	..	..	..	..	..	..
		Proddatur ..	1,88,447	1 13 4	69,582	0 10 10	2,58,029	2 8 2	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	51,64,664	4 15 8	12,60,570	1 3 5	64,25,234	6 3 1	56,079	0 0 11	1,932	..	58,011	0 0 11	..	3,840	4·0	..	102	0·1
VI. Morappur-Hosur-Bangalore.	Salem ..	Hosur	3,12,379	1 9 11	3,14,605	1 10 0	6,26,984	3 3 11	..	..	..	..	..	..	..	..	..	..	..	..
		Krishnagiri ..	3,20,881	1 14 2	3,24,353	1 14 5	6,45,234	3 12 7	..	..	..	..	..	..	..	..	..	..	..	..
		Dharmapuri ..	4,16,005	2 2 11	7,17,543	3 12 3	11,33,548	5 15 2	1,189	0 0 1	..	..	1,189	0 0 1	2	329	1·8	..	..	..
		Uttangarai ..	3,10,021	2 0 2	4,15,776	2 11 3	7,25,797	4 11 5	165	..	..	..	165	..	1	611	4·4	..	..	..
		Total ..	13,59,286	1 14 9	17,72,277	2 8 1	31,31,563	4 6 10	1,354	..	..	..	1,354	..	..	940	1·5	..	..	..
VII. Salem-Porto Novo.	South Arcot and Salem.	Chidambaram ..	1,213	0 0 1	21,931	0 1 5	23,144	0 1 6	..	..	..	..	..	..	..	..	..	..	..	..
		Vriddháchalam.	1,731	0 0 2	1,03,705	0 9 4	1,05,436	0 9 6	..	..	..	..	..	..	..	..	..	..	..	..
		Kallakurchi ..	..	..	1,19,903	0 9 9	1,19,903	0 9 9	..	..	..	..	..	..	..	..	..	..	..	..
		Atúr	1,72,386	1 0 10	1,78,412	1 1 5	3,50,798	2 2 3	..	..	..	..	..	..	..	..	..	..	..	..
		Salem	3,59,245	0 14 7	5,63,051	1 6 10	9,22,296	2 5 5	821	..	2,093	0 0 1	2,914	0 0 1	2	920	2·2	9	99	0·2
		Total ..	5,34,575	0 7 4	9,87,002	0 13 5	15,21,577	1 4 9	821	..	2,093	..	2,914	..	..	920	0·7	..	99	0·08
VIII. Salem-Námakkal-Karúr.	Salem and Coimbatore.	Salem	3,59,245	0 14 7	5,63,051	1 6 10	9,22,296	2 5 5	821	..	2,093	0 0 1	2,914	0 0 1	2	920	2 2	9	99	0·2
		Námakkal ..	2,08,241	0 12 9	2,68,775	1 0 6	4,77,016	1 13 3	..	..	..	..	..	..	..	..	..	..	..	..
		Tiruchengodu..	2,44,856	0 15 9	3,35,560	1 5 6	5,80,416	2 5 3	1,08,193	0 6 11	2,941	0 0 2	1,11,134	0 7 1	11	4,223	16·9	11	125	0·5
		Karúr	3,15,589	1 12 9	1,31,549	0 12 0	4,47,138	2 8 9	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	11,27,931	1 0 8	12,98,935	1 3 3	24,26,866	2 3 11	1,09,014	0 1 5	5,034	0 0 1	1,14,048	0 1 6	..	5,143	4·4	..	224	0·2

Statement showing the expenditure on account of relief during past famines and the average number of people relieved during the famine of 1891 and 1892, &c.—*cont.*

Number and designation of protective railway.	Tract traversed.		Expenditure during the famine of 1876—78.						Expenditure during the famine of 1891–92.						Number relieved in the famine of 1891–92.					
			On relief works.		Gratuitous relief.		Total.		On relief works.		Gratuitous relief.		Total.		On relief works.			Gratuitous relief.		
	District.	Taluk.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.	Rs. A. P.	Mons.			Mons.		
IX. Podanur-Dindigul.	Coimbatore and Madura.	Coimbatore ..	3,49,146	1 6 10	1,37,873	0 9 0	4,87,019	1 15 10	2,154	0 0 1	..	..	2,154	0 0 1	3	312	1·0	..	..	..
		Pollachi ..	67,652	0 6 6	77,509	0 7 4	1,45,161	0 13 10	9,947	0 0 11	646	0 0 1	10,593	0 1 0	10	427	2·3	4	72	0 04
		Udamalpet ..	2,03,592	1 10 4	4,17,129	3 6 0	6,20,721	5 0 4	11,618	0 1 4	2,200	0 0 3	13,818	0 1 7	5	577	4·0	5	263	1·8
		Dhárápuram ..	1,33,194	0 9 9	91,414	0 6 9	2,24,608	1 0 6	19,986	0 1 3	2,060	0 0 1	22,046	0 1 4	6	1,263	5·0	3	304	1·2
		Palni	2,04,078	1 1 8	1,83,771	0 15 10	3,87,849	2 1 6	..	..	..	..	..	..	..	..	..	..	..	..
		Dindigul ..	84,746	0 4 2	1,39,969	0 6 11	2,24,715	0 11 1	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	10,42,408	0 13 2	10,47,665	0 13 3	20,90,073	1 10 5	43,705	0 0 6	4,906	..	48,611	0 0 6	..	2,579	1·7	..	574	0·4
X. Madura-Pamban.	Madura ..	Madura ..	51,320	0 3 6	72,255	0 4 11	1,23,575	0 8 5	..	..	..	..	..	..	..	..	..	..	..	..
		Ramnad and Sivaganga ..	11,494	0 0 2	1,78,046	0 3 0	1,89,540	0 3 2	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	62,814	0 0 10	2,50,301	0 3 4	3,13,115	0 4 2	..	..	..	..	..	..	..	..	..	..	..	..
XI. Koilpatti-Adirámpatnam.	Tanjore, Madura and Tinnevelly.	Pattukkóttai ..	..	..	5,044	0 0 4	5,044	0 0 4	..	..	..	..	..	..	..	..	..	..	..	..
		Sivaganga ..	2,595	0 0 1	1,08,862	0 4 0	1,11,457	0 4 1	..	..	..	..	..	..	..	..	..	..	..	..
		Ottappidaram ..	5,001	0 0 3	79,000	0 4 3	84,001	0 4 6	..	..	..	..	..	..	..	..	..	..	..	..
		Ramnad ..	8,899	0 0 3	69,184	0 2 2	78,083	0 2 5	..	..	..	..	..	..	..	..	..	..	..	..
		Sátúr	5,515	0 0 7	23,497	0 2 4	29,012	0 2 11	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	22,010	0 0 3	2,85,587	0 2 10	3,07,597	0 3 1	..	..	..	..	..	..	..	..	..	..	..	..
XII. Trichinopoly-Pudukkóttai-Tondi.	Trichinopoly and Madura.	Trichinopoly ..	33,949	0 1 9	64,024	0 3 4	97,973	0 5 1	..	..	..	..	..	..	..	..	..	..	..	..
		Pudukkóttai * ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Ramnad and Sivaganga ..	11,494	0 0 2	1,78,046	0 3 0	1,89,540	0 3 2	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	45,443	0 0 7	2,42,070	0 3 1	2,87,513	0 3 8	..	..	..	..	..	..	..	..	..	..	..	..
XIII. Pondugal-Narsaraopet.	Kistna and Nellore.	Sattenapalle ..	..	..	3,248	0 0 6	3,248	0 0 6	..	..	..	..	..	..	..	..	..	..	..	..
		Narsaraopet ..	..	..	39,762	0 5 3	39,762	0 5 3	..	..	..	..	..	..	..	..	..	..	..	..
		Palnad ..	..	..	3,503	0 0 5	3,503	0 0 5	..	..	..	..	..	..	..	..	..	..	..	..
		Bápatla ..	1,86,827	1 4 9	10,354	0 1 2	1,97,181	1 5 11	..	..	..	..	..	..	..	..	..	..	..	..
		Vinukonda ..	..	..	27,675	0 6 11	27,675	0 6 11	..	..	..	..	..	..	..	..	..	..	..	..
		Ongole ..	3,503	0 0 3	16,922	0 1 5	20,425	0 1 8	..	..	..	..	..	..	8	584	2·6	..	..	..
		Total ..	1,90,330	0 4 1	1,01,464	0 2 2	2,91,794	0 6 3	..	..	..	..	..	..	..	584	0·6	..	..	..

* Figures not available.

Statement showing the expenditure on account of relief during past famines and the average number of people relieved during the famine of 1891 and 1892, &c.—*cont.*

Number and designation of protective railway.	Tract traversed.		Expenditure during the famine of 1876—78.						Expenditure during the famine of 1891–92.						Number relieved in the famine of 1891–92.					
			On relief works.		Gratuitous relief.		Total.		On relief works.		Gratuitous relief.		Total.		On relief works.			Gratuitous relief.		
	District.	Taluk.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.	Rs. A. P.	Rs.				Mons.			Mons.		
XIV. Tinnevelly-Nagerkoil.	Tinnevelly.	Tinnevelly ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Srívaikuntam ..	..	..	4,000	0 0 3	4,000	0 0 3	..	..	..	..	..	..	..	..	..	..	..	..
		Nánguneri ..	50	..	302	..	352	..	..	..	..	..	..	..	..	..	..	..	..	..
		Ambásamudram.	..	..	16	..	16	..	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	50	..	4,318	0 0 1	4,368	0 0 1	..	..	..	..	..	..	..	..	..	..	..	..
XV. Vizianagram-Raipur.	Vizagapatam.	Vizianagram ..	..	..	612	0 0 1	612	0 0 1	..	..	..	..	..	..	..	..	..	..	..	..
		Gajapatinagaram.	..	..	70	..	70	..	..	..	..	..	..	..	..	..	..	..	..	..
		Sálúru	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	..	..	682	0 0 0	682	0 0 0	..	..	..	..	..	..	..	..	..	..	..	..
XVI. Bezwada-Masulipatam.	Kistna ..	Bandar ..	20,246	0 2 0	926	0 0 1	21,172	0 2 1	..	..	..	..	..	..	..	..	..	..	..	..
		Gudiváda ..	..	..	47	..	47	..	..	..	..	..	..	..	..	..	..	..	..	..
		Bezwada ..	40,851	0 7 10	7,806	0 1 6	48,657	0 9 4	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	61,097	0 2 11	8,779	0 0 5	69,876	0 3 4	..	..	..	..	..	..	..	..	..	..	..	..
XVII. Tinnevelly-Quilon.	Tinnevelly.	Tinnevelly ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		Ambásamudram.	..	..	16	..	16	..	..	..	..	..	..	..	..	..	..	..	..	..
		Tenkási ..	..	..	1,591	0 0 2	1,591	0 0 2	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	..	..	1,607	0 0 0	1,607	0 0 0	..	..	..	..	..	..	..	..	..	..	..	..
XVIII. Chinna Salem-Tirukkóyilúr.	South Arcot	Kallakurchi ..	..	..	1,19,903	0 9 9	1,19,903	0 9 9	..	..	..	..	..	..	..	..	..	..	..	..
		Tirukkóyilúr ..	12,130	0 0 11	1,56,468	0 11 7	1,68,598	0 12 6	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	12,130	0 0 5	2,76,371	0 10 9	2,88,501	0 11 2	..	..	..	..	..	..	..	..	..	..	..	..

Statement showing the expenditure on account of relief during past famines and the average number of people relieved during the famine of 1891 and 1892, &c.—*cont.*

Number and designation of protective railway.	Tracts traversed.		Expenditure during the famine of 1876-78.						Expenditure during the famine of 1891.						Number relieved in the famine of 1891-92.					
			On relief works.		Gratuitous relief.		Total.		On relief works.		Gratuitous relief.		Total.		On relief works.			Gratuitous relief.		
	District.	Taluk.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1871.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Amount.	Incidence per head of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.	Duration of the operations. Number of months.	Average monthly number.	Per mille of the population in 1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			RS.	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	RS.		RS.		RS.		MONS.			MONS.		
XIX. Panruti-Kachirayapalaiyam.	South Arcot.	Cuddalore ..	1,071	0 0 1	57,496	0 3 2	58,567	0 3 3	..	..	..	..	..	..	..	..	..	..	..	..
		Tirukkóyilúr ..	12,150	0 0 10	1,56,468	0 11 7	1,68,598	0 12 5	..	..	..	..	..	..	..	..	..	..	..	..
		Kallakurchi ..	..	..	1,19,903	0 9 9	1,19,903	0 9 9	..	..	..	..	..	..	..	..	..	..	..	..
		Vriddhachalam .	1,731	0 0 2	1,03,705	0 9 4	1,05,436	0 9 6	..	..	..	..	..	..	..	..	..	..	..	..
		Total ..	14,932	0 0 3	4,37,572	0 8 0	4,52,504	0 8 3	..	..	..	..	..	..	..	..	..	..	..	..
XX. Tindivanam-Tiruvannámalai-Samalpatti.	South Arcot and Salem	Tindivanam ..	2,463	0 0 2	76,548	0 5 1	79,011	0 5 3	..	..	..	..	..	..	..	..	..	..	..	..
		Tiruvannámalai.	7,372	0 0 9	2,74,003	1 10 7	2,81,375	1 11 4	..	..	..	..	..	..	..	..	..	..	..	..
		Uttangarai ..	3,10,021	2 0 2	4,15,776	2 11 3	7,25,797	4 11 5	165	..	..	..	165	..	1	611	4·4	..	..	..
		Total ..	3,19,856	0 9 2	7,66,327	1 5 11	10,86,183	1 15 1	165	..	..	..	165	..	..	..	..	..	..	..

Note.—1. The expenditure on *relief works* in the taluks of Hospet, Ongole and Nandyal, and on *gratuitous relief* in Bellary and Koilkuntla taluks have not been reported by the Collectors concerned.
2. The figures entered for the various taluks in the districts of Cuddapah and Kurnool are reported by the Collectors to refer only to *road works* carried out from *Local funds*
3. The figures entered against the taluks of Salem and Tiruchengódu are exclusive of Rs. 4,815 spent on irrigation works in both taluks. Details of the amount for each of the taluks are not available.
4. The figures showing expenditure in 1891-92 appear to be unreliable in several other cases also.

APPENDIX III.

Statement showing the population, arable, cultivated and protected areas and rainfall in the several tracts.

Number and designation of the protective railway concerned.	District.	Taluk.	Population in 1891.				Population—Loss or gain per cent. between			Percentage of area.				Area protected in ordinary seasons under					Rainfall in inches.		
			Per square mile.		Per 1,000 acres.																
			Rural.*	Total.	Arable.	Cultivated.	1871 and 1881.	1881 and 1891.	1871 and 1891.	Arable of total.	Occupied of arable.	Cultivated of occupied.	Cultivated of total.	Minor tanks and channels.	Wells and dorruvas.	Large works.	Total.	Percentage of area cultivated.	Average.	Maximum.	Minimum.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
														ACS.	ACS.	ACS.	ACS.				
I. Hospet-Harihar.	Bellary ..	Hospet	171	379	912		— 9·0	+ 8·2	— 1·5	82	48	86	34	7,600	1,600	8,700	17,900	16·6	26·36	47·90	10·32
		Kúdligi	109	215	637		— 19·9	+ 26·0	+ 0·9	81	36	88	26	5,800	3,600	..	9,400	6·2	23·93	37·65	11·37
		Hadagalli	178	271	534		— 15·6	+ 41·2	+ 19·2	89	59	95	51	1,700	100	..	1,800	0·9	21·53	33·51	6·43
		Harpanahalli	136	253	467		— 17·6	+ 14·2	— 5·9	86	59	72	45	3,200	400	..	3,600	1·9	23·12	35·22	10·05
II. Bellary-Rayadrug-Holalkeri.	Bellary ..	Bellary	120	188	335	1,002	— 18·3	+ 21·3	— 0·9	88	81	91	65	1,300	1,700	3,600	6,600	3·6	18·59	31·37	7·23
		Rayadrug	..	109	251	520	— 4·5	+ 23·6	+ 18·0	80	68	86	47	11,200	5,000	..	16,200	8·4	19·06	30·55	8·10
III. Dhone-Kurnool.	Kurnool ..	Rámallakóta	120	148	313	416	— 35·3	+ 32·0	— 14·5	74	81	94	57	3,000	400	2,600	6,000	2·0	31·33	63·17	6·15
		Nandikótkur	..	67	236	356	— 28·6	+ 21·8	— 13·1	43	76	89	29	5,000	700	39,000	44,700	18·7	28·76	58·57	7·50
IV. Giddalúr Vantimitta.	Kurnool and Cuddapah.	Cumbum	111	526	862		— 10·7	+ 7·1	— 4·4	33	74	87	21	7,500	2,500	5,300	15,300	11·3	24·97	34·37	7·20
		Sidhout	119	1,042	1,775		— 22·9	+ 13·1	— 12·9	16	74	80	10	10,700	12,500	..	23,200	61·4	34·49	55·20	8·28
		Badvel	123	533	1,059		— 11·4	+ 13·0	+ 0·1	36	64	81	19	18,500	8,500	..	27,000	3·5	29·54	43·78	8·12
V. Kalikiri-Yerraguntla-Nandyal.	Cuddapah and Kurnool.	Váyalpád	153	558	1,044		— 28·3	+ 21·6	— 12·7	43	67	83	24	31,300	3,000	..	34,300	28·6	27·97	47·60	9·31
		Rávachóti	114	510	748		— 27·8	+ 22·4	— 11·6	34	74	90	24	16,000	4,900	..	20,900	13·8	25·91	47·23	4·50
		Pulivendla	151	420	524		— 13·4	+ 10·7	— 4·1	55	85	94	45	7,900	8,800	..	16,700	8·4	21·94	44·73	6·00
		Cuddapah	146	203	545	755	— 9·5	+ 5·1	— 5·0	55	86	87	38	13,900	19,400	6,400	45,700	25·7	34·05	58·50	9·45
		Jammalamadugu		164	441	502	— 16·4	+ 10·0	— 7·9	61	94	92	52	6,200	6,700	1,800	14,700	7·5	21·62	40·63	4·40
		Koilkuntla		151	352	418	— 22·8	+ 13·4	— 12·4	67	93	95	60	5,200	1,400	25,600	32,200	15·6	24·55	43·35	6·03
		Nandyal		113	354	485	— 27·1	+ 23·0	— 10·3	59	87	92	40	6,800	100	45,000	51,900	26·1	35·96	67·65	10·98
		Proddatur		206	512	663	— 11·8	+ 8·6	— 4·2	62	86	89	48	8,500	10,400	8,800	27,700	18·4	26·24	47·56	8·50
		Sirvel		106	285	358	— 19·5	+ 13·9	— 8·3	58	86	91	46	4,800	2,100	34,800	41,700	22·9	31·20	75·68	15·67
VI. Morappur Hosúr and Bangalore.	Salem ..	Dharmapuri	190	616	953		— 28·7	+ 31·1	— 6·6	47	72	93	32	11,800	2,000	..	13,800	9·6	30·48	43·25	8·15
		Krishnagiri	231	657	963		— 29·0	+ 26·0	— 10·5	66	84	90	50	12,100	2,000	1,700	15,800	14·5	31·39	50·35	15·85
		Hósúr	128	479	1,096		— 31·7	+ 18·3	— 19·2	37	60	25	17	9,800	900	..	10,700	12·4	32·86	47·07	16·84
		Uttangarai																			
														Vide infra. Group No. XX.							
VII. Salem-Porto Novo.	South Arcot and Salem.	Chidambaram	702	1,388	1,718		+ 10·9	+ 6·7	+ 18·3	79	92	90	65	800	..	102,400	103,200	62·9	52·16	84·45	26·83
		Vriddhachalam	374	813	1,350		+ 4·8	+ 19·1	+ 24·8	72	63	91	41	13,100	1,000	4,800	18,900	11·5	38·85	68·05	20·10
		Kallakurchi	277	913	1,613		+ 0·2	+ 22·9	+ 23·1	61	58	91	32	27,400	4,200	..	31,600	22·9	36·50	52·48	18·79
		Salem	390	1,136	1,593		— 16·9	+ 27·6	+ 6·0	51	74	94	35	13,900	18,600	..	32,500	14·8	40·90	66·12	28·20
		Atúr	218	840	1,551		— 3·3	+ 15·5	+ 11·7	47	61	93	27	17,000	13,400	..	30,400	27·2	35·44	49·03	21·25

* The figures in this column show the population per square mile of rural area outside the municipality wherever such information is available.

Statement showing the population, arable, cultivated and protected areas and rainfall in the several tracts—*cont.*

Number and designation of the protective railway concerned.	District.	Taluk.	Population in 1891. Per square mile. Rural.	Population in 1891. Per square mile. Total.	Population in 1891. Per 1,000 acres. Arable.	Population in 1891. Per 1,000 acres. Cultivated.	Population—Loss or gain per cent. between 1871 and 1881.	Population—Loss or gain per cent. between 1881 and 1891.	Population—Loss or gain per cent. between 1871 and 1891.	Percentage of area. Arable of total.	Percentage of area. Occupied of arable.	Percentage of area. Cultivated of occupied.	Percentage of area. Cultivated of total.	Area protected in ordinary seasons under. Minor tanks and channels.	Area protected in ordinary seasons under. Wells and doruvas.	Area protected in ordinary seasons under. Large works.	Area protected in ordinary seasons under. Total.	Area protected in ordinary seasons under. Percentage of area cultivated.	Rainfall in inches. Average.	Rainfall in inches. Maximum.	Rainfall in inches. Minimum.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
														ACS.	ACS.	ACS.	ACS.				
VIII. Salem-Námakkal-Karúr.	Salem and Coimbatore.	Salem	..	420	906	1,281	— 2·5	+ 17·9	+ 14·9	*Vide supra. Group No. VII.*				6,500	7,800	6,000	20,300	18·7	27·99	39·15	16·86
		Námakkal	..	390	836	1,039	— 23·4	+ 30·0	— 0·4	81	85	95	65	9,000	15,800	..	24,800	14·1	26·28	37·33	11·25
		Tiruchengódu ..	..	346	626	910	+ 0·9	+ 19·6	+ 20·6	88	99	76	66	900	18,700	9,200	28,800	12·0	26·71	38·95	17·03
		Karúr	..																		
IX. Pódanúr-Dindigul.	Coimbatore and Madura.	Coimbatore	..	382	927	1,129	+ 9·8	+ 14·7	+ 25·9	64	89	90	51	13,500	26,400	..	39,900	15·4	21·73	28·95	14·99
		Pollachi	..	259	659	742	+ 3·2	+ 6·2	+ 9·6	56	99	90	50	6,100	14,400	..	20,500	10·1	30·21	44·86	16·92
		Udamalpet .. .	..	245	675	862	— 9·0	+ 27·1	+ 15·7	57	98	80	45	3,400	27,300	6,600	37,300	24·5	21·99	34·88	13·37
		Dhárápuram .. .	..	298	515	800	— 10·2	+ 27·7	+ 14·6	90	99	67	60	400	46,400	14,600	61,400	18·9	19·76	30·02	10·46
		Palni. { Kodaikánal.	..	45	776	1,015	— 7·2	+ 24·2	+ 15·3	47·4	58·9	83·6	23	15,000	31,500	..	46,500	44·9	25·11	39·95	9·95
		Palni ..	..	326	686	1,403				77·8	95·5	70·9	53								
		Dindigul	..	349	744	1,145	— 6·0	+ 28·3	+ 20·6	70·1	86·5	83·8	51	16,300	14,400	..	30,700	12·0	28·21	45·43	17·41
X. Madura-Pámban.	Madura ..	Madura	..	586	1,753	2,080	— 6·9	+ 21·3	+ 12·9	65·0	80·1	91·0	47	43,800	900	..	44,700	33·2	33·42	54·04	20·67
		Sivaganga	..	246	..	..	— 3·2	+ 18·0	+ 13·6	..	..	..	..	..	..	..	..	..	30·05	48·30	21·50
		Ramnad	..	311	..	..		+ 16·9											28·74	49·23	13·78
XI. Koilpatti-Adirámpatnam.	Tanjore, Madura and Tinnevelly.	Pattukkóttai	..	300	873	1,215	+ 3·1	+ 15·7	+ 19·3	63	85	84	46	25,200	1,100	3,400	29,700	48·9	38·70	52·94	24·60
		Sivaganga and Ramnad.								*Vide supra. Group No. X.*											
		Ottapidáram	..	322	593	768	— 9·0	+ 26·2	+ 15·0	87	95	78	65	2,400	6,800	1,100	9,800	6·1	23·46	52·81	9·73
		Sattur	..	323	626	687	— 3·8	+ 23·2	+ 18·4	89	96	94	81	3,500	3,800	..	7,300	3·9	24·04	42·09	8·34
XII. Trichinopoly-Pudukkóttai-Tondi.	Trichinopoly and Madura.	Trichinopoly ..	..	666	1,613	2,115	+ 9·5	+ 7·4	+ 17·6	72	77	82	46	11,600	3,300	84,300	99,200	55·0	32·55	42·49	20·25
		Pudukkóttai ..	..	..	..	..	..	..	..	...	..	..	..	..	..	..	..	..	..	..	..
		Ramnad and Sivaganga.								*Vide supra. Group No. X.*											
XIII. Pondugal-Narasaraopet.	Kistna and Nellore.	Sattenápalle	..	194	426	576	+ 8·4	+ 25·7	+ 36·3	69	94	78	52	1 200	..	..	1,200	0·50	29·61	52·62	11·24
		Narasaraopet	..	220	438	584	+ 6·8	+ 2·4	+ 29·6	83	91	78	60	2,800	1,000	..	3,800	1·46	30·20	43·70	13·20
		Palnad	..	133	379	484	+ 4·3	+ 12·9	+ 17·7	53	81	97	42	2,100	200	..	2,300	·81	29·04	47·00	13·90
		Vinukonda	..	128	352	540	+ 3·8	+ 23·1	+ 27·8	54	82	79	35	2,300	2,300	..	4,600	3·01	27·33	48·44	9·96
		Bápatla	..	268	569	785	+ 5·6	+ 19·9	+ 26·6	71	88	83	52	2,300	..	62,500	64,800	31·26	36·93	51·15	14·39
		Ongole	..	283	591	750	— 3·3	+ 19·4	+ 15·5	76	97	80	60	2,800	1,400	800	5,000	2·1	34·09	51·35	17·39
XIV. Tinnevelly-Nagerkoil.	Tinnevelly ..	Srivaikuntam	..	531	1,132	1,915	+ 20·8	+ 2·9	+ 24·3	75	94	62	45	7,500	3,000	38,100	49,000	32·3	25·01	46·38	11·15
		Nánguneri	..	239	566	1,228	— 2·1	— 2·0	— 4·1	68	91	55	35	32,800	5,100	..	37,900	26·6	26·73	46·27	12·99
		Tinnevelly and Ambásamudram.								*Vide infra. Group No. XVII.*											
XV. Vizianagram-Sálúr-Raipur.	Vizagapatam.	Vizianagaram	..	634	..	..	+ 7·1	+ 13·2	+ 21·3	..	..	..	..	..	..	..	..	..	44·06	78·60	28·15
		Gajapatinagaram ..	..	356	..	..	+ 7·8	+ 6·0	+ 14·2	..	..	..	..	..	..	..	..	..	36·17	66·39	24·15
		Sálúr	..	423	..	..	+ 4·0	+ 3·5	..	..	..	..	..	..	..	..	..	..	43·59	97·50	26·85

Statement showing the population, arable, cultivated and protected areas and rainfall in the several tracts—*cont.*

Number and designation of the protective railway concerned.	District.	Taluk.	Population in 1891. Per square mile. Rural.	Population in 1891. Per square mile. Total.	Population in 1891. Per 1,000 acres. Arable.	Population in 1891. Per 1,000 acres. Cultivated.	Population—Loss or gain per cent. between 1871 and 1881.	Population—Loss or gain per cent. between 1881 and 1891.	Population—Loss or gain per cent. between 1871 and 1891.	Percentage of area. Arable of total.	Percentage of area. Occupied of arable.	Percentage of area. Cultivated of occupied.	Percentage of area. Cultivated of total.	Area protected in ordinary seasons under. Minor tanks and channels.	Area protected in ordinary seasons under. Wells and doruvas.	Area protected in ordinary seasons under. Large works.	Area protected in ordinary seasons under. Total.	Area protected in ordinary seasons under. Percentage of area cultivated.	Rainfall in inches. Average.	Rainfall in inches. Maximum.	Rainfall in inches. Minimum.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
														ACS.	ACS.	ACS.	ACS.				
XVI. Bezwada-Masulipatam.	Kistna ..	Bandar	215	269	616	1,909	+ 6·7	+ 13·0	+ 20·6	56	73	61	25	5,600	..	17,600	23,200	36·02	39·23	69·43	18·99
		Gudiváda	..	199	412	884	+ 13·9	+ 19·2	+ 35·8	74	94	49	35	1,800	..	124,300	126,100	81·25	36·27	67·85	21·60
		Bezwada	..	249	730	1,124	— 0·2	+ 28·4	+ 28·1	67	87	74	44	5,000	..	11,600	16,600	24·70	35·03	54·86	22·25
XVII. Tinnevelly-Quilon.	Tinnevelly ..	Tinnevelly	..	565	1,229	2,188	— 6·9	+ 7·8	+ 0·3	78	91	61	45	10,700	2,500	20,000	33,200	37·6	28·00	41·61	17·43
		Ámbásamudram ..	..	382	1,348	2,292	+ 1·2	+ 11·2	+ 12·5	41	97	55	22	19,800	600	16,400	36,800	48·3	34·89	58·60	20·25
		Tenkási	..	414	1,034	1,365	+ 15·1	+ 10·1	+ 26·8	65	96	75	47	21,100	2,200	..	23,300	33·3	38·55	62·55	22·41
XVIII. Chinna-Salem-Tirukkóyilúr.	South Arcot ..	Tirukkóyilúr	452	1,128	1,492	— 4·5	+ 24·2	+ 18·6	61	78	92	44	30,500	3,400	11,600	45,500	27·1	39·95	67·17	22·60
		Kallakurchi	277	913	1,613	+ 0·2	+ 22·9	+ 23·1	61	58	91	32	27,400	4,200	..	31,600	22·9	36·50	52·48	18·79
XIX. Panruti-Kachiráyapálayam.	South Arcot ..	Cuddalore	643	753	1,581	1,991	+ 4·8	+ 14·3	+ 19·8	74	83	93	58	19,500	5,800	14,900	40,200	24·4	53·25	102·15	29·57
		Tirukkóyilúr ..								*Vide supra.*	*Group No. XVIII.*										
		Kallakurchi ..								*Do.*	*do.*										
		Vriddhachalam ..								*Do.*	*Group No. VII.*										
XX. Tindivanam, Tiruvannámalai-Samalpatti.	South Arcot and Salem.	Tindivanam	387	901	1,424	1,424	+ 10·2	+ 19·6	+ 31·8	67	78	86	45	62,700	8,700	..	71,400	32·5	46·50	78·90	26·31
		Tiruvannámalai ..	203	739	1,519	— 6·9	+ 32·7	+ 23·5	42	60	86	22	27,600	5,700	..	33,300	24·8	37·75	58·21	19·38
		Uttangarai	152	513	872	— 28·8	+ 26·2	— 10·2	44	66	89	26	7,100	700	..	7,800	6·1	32·72	50·15	15·61

NOTE.—1. Figures entered in columns 5 to 22 have been adopted from the Statistical Atlas of the Madras Presidency compiled by Mr. Benson.
2. The figures in column 4 show the population per square mile of rural area outside Municipal towns, wherever such information has been furnished by Collectors.

Read—also the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), Mis. No. 5201, dated 10th July 1897 :—

Read—endorsement from Government, Revenue Department, No. 1235-R., dated 1st July 1897.

Resolution—Mis. No. 5201, dated 10th July 1897.

The Board begs to state that the information available in this office regarding the proposed railway from Kalikiri to Yerragantla will be found in Board's Proceedings, No. 397, Revenue Settlement, of 25th May 1897—*vide* No. V in paragraphs 2 and 4 of the Proceedings, paragraph 3 in appendix No. I thereto and No. V in the statements in appendices II and III.

(True Extract.)

(Signed) R. V. SRINIVASIAR,
Secretary.

To the Secretary to Government, Revenue Department.

Read—also the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), Mis. No. 6556, dated 17th August 1897 :—

Read—the following letter from the Collector of Cuddapah, Reference on Current No. 227, Revenue, dated 9th August 1897 :—

The construction of a railway from Kalikiri station on the South Indian Railway in Vayalpad taluk through Kalkonda, Ráyachóti, Lakkireddipalli, Surabhu and Vempalla to Yerraguntla station on the Madras Railway was proposed to be undertaken as a famine protective work in my letter, Dis. No. 58-Tour, dated 12th May 1896, and a report on the subject containing the information required by the Government of India in connection with proposals to construct railways from the Famine Insurance Grants (*vide* G.O., No. 4403, Revenue, dated 5th November 1895), was also submitted with my letter, Dis. No. 2937, Revenue of 1896, dated 8th July 1896. In the list of protective lines of railways printed in page 4 of Board's Proceedings, No. 397, dated 25th May 1897, this line is placed next after the Giddalur-Vontimitta line, but so far as this district is concerned, I am very strongly of opinion that the former is much more important in its protective value. The Giddalur-Vontimitta line is not required so far as the Kurnool district is concerned as all the principal villages of Kumbum taluk traversed by the proposed line are within easy reach of the present Giddalur Railway station; the villages between Vontimitta and Sidhout are similarly situated with regard to the Vontimitta Railway station on the Madras Railway, the distance from Vontimitta to Sidhout being only 7 miles. The tract between Sidhout and Kondur is a continuous block of hills and jungles without any village on the way. The villages between Kondur and Badvel are least liable to famine owing to their situation, mostly on the banks of the Sagiler, where there are many doruvu wells. There are not many important villages between Badvel and Porumamilla, and the tract is mostly hilly. Porumamilla firka was no doubt affected in 1891–92, but since then the Upper Sagiler project has been completed, and the big tank of Porumamilla and some other tanks in this part of the taluk are supplied by channels from the Sagiler, so that this tract has now been rendered less liable to famine than before. The other line proposed in this district, viz., the Kalikiri-Yerraguntla line should certainly be given preference to the Giddalur-Vontimitta line. The portions of the Vayalpad and Ráyachóti taluks traversed by the proposed Kalikiri-Yernaguntla line are generally dependent on local rainfall, and at the present moment this part will possibly suffer severe distress owing to the deficiency of the south-west monsoon rains, unless more rain falls very soon. This line would serve a portion of Vayalpad taluk, the whole of Ráyachóti and the eastern and western portions of Pulivendla and Cuddapah taluks respectively. The track lies within what is called the famine zone of the Madras Presidency. Between 1800 and 1891–92 the tract suffered from distress on seven occasions.

1800–1802.	1865–1866.
1805–1807.	1876–1878.
1823–1824.	1891–1892.
1833–	

2. The Superintending Engineer cannot suggest any other useful work to be undertaken in this tract of the sub-division, and, except collecting metal and gravel for roads which in the sub-division where the roads are generally in good order will be even more useless than elsewhere, there are no suitable works on which famine labour can be employed. I have therefore the honour to request that a start be made by surveying the very easy bit of the proposed line from Kalikiri to Ráyachóti. This portion of line would be very inexpensive to construct and an immense boon to a tract which, as the Board says, is more liable to famine than any other in the Presidency. The survey from Kalikiri to Ráyachóti could be completed in a very short time.

3. I most strongly urge that in the interests of this district—to avoid the ever-recurring anxiety about the population of the tract of which I write—that the Government be specially addressed regarding my present modified proposal. I understood from a conversation with Mr. Hightan on the occasion of his recent visit to Cuddapah that there will be no insuperable objections to obtaining sanction for the construction of a short length of line possessing such manifest advantages as that which I now propose.

Resolution—Mis. No. 6556, dated 17th August 1897.

Submitted to Government, Revenue Department, in continuation of Board's Proceedings, No. 5201, dated 10th July 1897. In the light of the facts adduced by the Collector, the Kalikiri-Yerraguntla line appears to be of greater protective value than the Giddalur-Vontimitta line.

(True Copy and Extract.)

(Signed) R. V. SRINIVASIAR,
Secretary.

To the Secretary to Government, Revenue Department.
Copy to the Collector of Cuddapah.

Read—also the following note by the Consulting Engineer for Railways, Madras, dated 14th August 1897 :—

In noting on this very wide subject, in compliance with the instructions conveyed in Hon'ble Members' notes, dated 13th and 14th July, which have only now reached me, 11th August, I do so under the considerable disadvantage of having a comparatively very limited personal knowledge of the Presidency. However, during a recent extended tour of inspection, I picked up, in conversation and otherwise, a wider acquaintance than I had previously possessed of the general lie of the land, and can offer my opinion with somewhat less of diffidence than I should have done two months ago. The Board's note and the appendices accompanying it contain a large mass of information ordinarily inaccessible to a railway man, but useful for the purpose of enabling him to form some sort of a judgment as to the elative values of the various schemes of railway extension from a famine point of view. The strictly commercial point of view is usually the one from which, almost necessarily, owing to the absence of special statistics, he examines the railway schemes that come before him.

2. The first thing I notice is that several of the twenty schemes may at once be removed from the Board of Revenue's list, for the sufficient reason that we seem likely to get them without aid from the "Famine Insurance Fund," owing to the keenness with which one Railway Company or another is desirous of constructing

them. Thus the Southern Mahratta Railway Company need no special temptation to take up the Kurnool branch and the Masulipatam branch; the Madura-Pámban and the Tinnevelly-Quilon seem within measurable distance of being taken up by the South Indian Railway Company; while the Madras Railway Company are only too eager to get the making of the Pódanúr-Dindigul line for which the South Indian Railway are also competing. Then the Raja of Pudukkóttai has expressed a desire to assist in the financing of the Trichinopoly-Tondi line, while the Local Board of Tanjore are anxious to be allowed to extend their Máyavaram-Mutupet line to Avadaiyárkóvil, and it would doubtless in time be extended to meet the Tondi line at Devakóttai or the neighbourhood. Besides the Tinnevelly-Quilon line, the Board of Revenue's map shows an extension southwards from Tinnevelly to Aramboli and thence to Trivandrum. This is only an alternative to the Tinnevelly-Quilon in this department's scheme of railway extension, and it seems good enough in itself for the South Indian Railway to be willing to take it up as far as Aramboli on the frontier. I think that the Vizianagram-Raipur line may very well be struck out of the list; it is rather too big a scheme to be brought within a famine insurance programme; and moreover there seems a fairly good prospect of its southern section from Vizianagram to Parvatipuram being floated without assistance from the famine grant. For the reasons given I would strike out from a scheme of famine railways the nine projects numbered in the Board's list as follows: III, IX, X, XI, XII, XIV, XV, XVI, XVII. I may explain that my reason for cutting out the lower half of No. XI, viz., from Kolapati to Devakóttai, is that it would so seriously short-circuit the South Indian Railway that it could not well be pressed for with any chance of success.

3. But the nine schemes above referred to are not the only ones that I would cut out. On the principle enunciated in the Government of India's letter that a railway may be considered to sufficiently protect a strip of country 25 miles broad on each side of it, that is, the distance which a pair of bullocks can traverse in a couple of days, I would cut out No. XVIII, Chinna Salem-Tirukkóyilúr, and No. XIX, Panruti-Kachirayapalayam. For the same reason I would cut out the Narsaraopet-Chirala section of No. XIII, because it merely connects two railways which are already only from 0 to 40 miles apart for a length of 100 miles. No. XVIII and XIX are really only alternatives proposed in lieu of parts of scheme No. VII. That leaves us with only the following schemes, viz., Nos. I, II, IV, V, VI, VII, VIII, XX, and a small part of No. XIII—a very reduced programme.

4. I shall now go steadily through the remaining proposed railways, and if I fall into error it must be ascribed to my comparatively small acquaintance with the localities. First, I find on the extreme north-east of the Presidency a proposal to make two new lines across the gap separating the Hubli-Guntakal and the Hubli-Bangalore sections of the Southern Mahratta Railway. One of these proposed projects, that from Bellary to Holalkeri, No. II, passes for considerably more than half its length through Mysore territory. The Madras section of it connects Bellary with Rayadrug. The argument advanced in favour of this line by the Board of Revenue is that Rayadrug draws its supplies in famine time from Bellary. But my somewhat limited recollection of the conditions is that when Rayadrug is stricken Bellary shares in its misfortune, and that in famine time Bellary looks elsewhere for its food. I take it that, in view of our declared policy of trying to equip Bellary against future famines by putting it in touch with the Kistna delta, it would be well to work towards Rayadrug from the railway junction and locomotive centre of Guntakal. Similarly it is open to question whether, instead of line No. I from Hospet to Harihar, it would not be possible to open out that tract of country by a line running south and east from Gadag; the Hospet-Harihar line, however, has the advantage of not crossing the Kistna. I certainly think, as regards these two lines, that we ought to consult the Southern Mahratta Railway authorities, giving them particulars of the famine tracts and asking them to advise how best to get at them so as to combine cheapness of first construction with economy of subsequent working and management. I may lay it down as an axiom of economical railway working that, wherever it is possible to do so, a branch railway ought to be taken off from an existing junction, for in the multitude of junctions there is much leakage. I have been informed by the Resident in Mysore and by the Chief Engineer of Mysore that nothing has ever been said in that State

about the Rayadrug-Holalkeri section. But Colonel Bowen tells me that it would serve a useful purpose as connecting the important centre, Chitaldrug, with their railway system, and as opening up a considerable district which is a source of anxiety to the State in famine time.

5. Now turning to the north-western half of No. XIII, which I have not cut out; this is the proposed Narsaraopet-Pondugal line which Honourable Members objected to being referred to in our letter to India about the Kurnool line lest it should act as a "red herring across the scent." Since I noted on the latter project I have had a conversation on the subject of future metre gauge extension southward from Hyderabad, with Mr. G. P. Rose, C.I.E., the Chief Engineer of the Hyderabad-Gódávari Valley Railway. Mr. Rose tells me that the result of his and other enquiries about future extensions southwards is that the connection to be hereafter made across the great quadrangle, whose corners are Guntakal, Wadi, Warangal and Bezwada, will probably be *viâ* Kurnool and not *viâ* Pondugal. We may therefore take it that the proposed Narasaraopet-Pondugal branch of the Southern Mahratta Railway must be considered merely as a short branch and on its own merits. I shall have more to say later on about short branches of this sort which are little likely to become sections of main through routes. Like Nos. I and II this also is a line about which the Southern Mahratta Railway Company ought to be consulted.

6. I see that it is proposed to cross the Cuddapah country and the southern part of the Kurnool country by two rather extensive lines running north and south—one No. IV, running north from Vontimitta station of the Madras North-West line to Gidalur on the Bellary-Kistna section of the Southern Mahratta Railway; and the other, No. V, from Nandyal on the Bellary-Kistna section of the Southern Mahratta Railway through Yerraguntla on the Madras North-West line to Kalikiri on the Pakala-Dharmavaram section of the South Indian Railway. About both these lines one thing is quite certain, that they will barely pay working expenses in ordinary years. Not that this is a valid argument against the construction of what are intended as protective lines, but only that there must be no false hopes. The Pakala-Dharmavaram section of the South Indian Railway, a famine-protective section, is only earning about Rs. 30 per mile per week, and is probably not paying working expenses, and it may perhaps be found immediately necessary to run one train each way daily over it, instead of two. It looks to me as if the upper half of No. V might be cut out, that is, from Nandyal to Yerraguntla, because it runs parallel to the Kurnool-Cuddapah canal, which, if furnished with barges, ought, I presume, to be an efficient famine-protective work. The Board of Revenue refer, I see, only to its irrigational functions. I may add that I have just received from the Public Works Department their papers about the Yerraguntla-Kalikiri line.

7. Passing southward I notice that lines Nos. VI and XX, viz., the Bangalore-Hosur-Morappur line and the Tindivanam-Tiruvannámalai-Sámalpatti line, would apparently serve their intended purpose equally well, while they could be far more economically worked, if they crossed the Madras South-West line at a common junction at or near Kallavi. Next it looks as if the whole line might be altered and shortened and considerably cheapened if, leaving Bangalore, it crossed the Madras Railway at Kallavi and joined the South Indian Railway at Tiruvannámalai, which is, I believe, an important place of pilgrimage; because the Tiruvannámalai-Tindivanam country, being under 50 miles wide between two railways, may be considered to be efficiently protected. Colonel Bowen tells me that although the Mysore state have never proposed the construction of the Bangalore-Hosur section, they would not be likely to raise any objection to making it.

8. I pass now to project No. VII, having already noticed that projects Nos. XVIII and XIX are really only alternatives for part of No. VII. This is the scheme for supplying the famine district of Eastern Salem with grain from a sea-port. Most of that grain would, probably, come from the Tanjore delta; it looks therefore as if a line running north from Trichinopoly to Chinna Salem, to be eventually extended to Tirukkóyilúr, would serve the purpose while, at the same time, cutting off a great bend of the South Indian Railway. From Trichinopoly to Tirukkóyilúr would be 90

miles, and 20 more along the Villupuram-Dharmavaram line brings a train to Villupuram—total Trichinopoly to Villupuram 110, whereas round by the present main line from Trichinopoly to Villupuram is 150 miles. Thus there would be a saving of 40 miles on the main line, while the upper part of Trichinopoly district and the western part of South Arcot would be intersected by 90 miles of a new line in direct connection with the Tanjore delta and skirting a large tract of country liable to famine. The Madras Railway Company could not object to a direct Trichinopoly-Tirukkóyilúr line as being an interloper, as the entire region traversed is unquestionably South Indian Railway territory. I cannot help thinking that the north and south short cut, which I now propose, would, for famine protection purposes, be equally efficient with the Salem-Porto Novo line, with the great additional advantage of shortening the through route from Madras to South India by 40 miles. It would serve Seringham, Tripatur, Potatur, Perambalur, Volcondah, Chinna Salem, Kallakurichi and Tirukkóyilúr. I only take the names from the map, Honourable Members will know whether they have any importance. In Mr. Geoghegan's report of his survey of the Porto Novo-Salem route, dated 20th April 1897, referred to in this Government's Nos. 49 and 127 R., Public Works, dated respectively 18th January and 17th February 1888, I find a reconnaissance of the northern 35 miles from Chinna Salem to Tirukkóyilúr. Mr. Geoghegan's estimate for these 35 miles was Rs. 23,82,000. We have no figures or survey of the 55 miles from Chinna Salem to Trichinopoly. The Cauvery and Coleroon would have to be crossed at Trichinopoly, but this would not amount to anything very prohibitive on the whole line. Mr. Geoghegan gives a very favourable account of the bridging of the Ponniar at the northern end and estimates the 1,500 feet at 4½ lakhs.

9. The result of all this is that I think we should be unwise to plunge into the Salem-Porto Novo line without at least estimating the Trichinopoly-Tirukkóyilúr route also. The advantage of shortening the main through route is well worth securing if possible, and so far as I can judge the proposed route would be quite as efficient as the other for famine protective purposes.

10. I think, however, that it is a line which has in itself sufficiently great advantages to make it likely that the South Indian Railway might be disposed to take it up in the ordinary course of their extensions, and that there need be no question of obtaining a grant for it from the Famine Insurance Fund, which will doubtless be very sparingly doled out to us. I think it very probable that the old tradition of the connection of Salem with the Porto Novo iron-works, as well as the assumed formidableness, ten years ago, of the crossing of the Cauvery and Coleroon, have caused the east and west route to be considered instead of the north and south route; and, moreover, in those days the Tanjore delta was not so well opened out by railways as it now is, so possibly the advantage of feeding the railway from the sea at Porto Novo assumed a greater importance than would now be ascribed to it.

11. The last of the schemes to be considered is No. VIII, the line running due south from Salem on Madras Railway to Karur on the South Indian, and intended to protect the Námakkal taluk. I do not think that this tract is far enough away from the existing railways to justify the very heavy expenditure which would be involved in bridging the Cauvery if it is to be a metre gauge line, or the perhaps equally heavy expense of making it on the broad gauge as a branch of the Madras Railway terminating at the north bank of the Cauvery.

12. Having now glanced in turn at all the twenty projects, and pointed out that a large percentage of them seem likely to come to maturity of themselves without help from the famine grant, that some others do not seem necessary, that we require more information about others, and that the alignment of the remainder had better be carefully reconsidered before we commit ourselves to them, I proceed to offer my own very pronounced opinion upon the question of famine railways.

13. Many people unthinkingly assume that because a thing is called by the term "railway," it must necessarily be brought up to a certain recognized standard. In accordance with this superstition they are content to have twenty or thirty miles of what they term a railway when for the same money they might have a hundred

miles of an iron road which for all probable or possible famine purposes would be perfectly efficient.

14. I do not know what metalled district roads cost in Madras; but in some provinces I know that they run to from five to ten thousand rupees a mile. No direct return is got for this money, and, except when toll-bars are in use, there is no realization of maintenance expenses from the traffic that uses them. In some circumstances, and I am disposed to think in a larger number of cases than is usually realized, it would pay better to spend more money, and instead of metalling a road, to equip it as a very light cheap railway, at a cost of from Rs. 20,000 to Rs. 30,000 per mile. It will at least pay all expenses of upkeep, and if economically constructed and carefully worked it may sometimes, and indeed will usually pay interest at 3 per cent. on its capital also. There can be no question as to which is the more efficient machine for dealing with a famine, a light railway or a metal road, and it may happen once in twenty years that the saving of money in dealing with a famine in the tract served may go far towards making up any deficit in the working of, and indeed, may be found to go far towards recoupment of the capital outlay on, a carefully designed light railway.

15. When one sees the Villupuram-Dharmavaram line, a brewer's dray doing the work of a wheelbarrow, and that at a steady annual loss not only of interest but even perhaps of working expenses, one cannot help thinking how much further and more efficiently the money might have been laid out in equipping existing district roads with light rails, assuming of course that they had been carefully selected. I attach a note that I wrote for the Assam Government upon this subject, though there it is a question rather of general development than of a famine policy. A properly-equipped 2′ 6″ line, costing only from a third to one-half the cost of a metre gauge line of the usual type, will, in most cases, amply suffice to do all the work, which it is likely to be called on to do in a famine, in a sparsely peopled district.

16 We cannot have all the mileage of railway we should like to have on the standard or metre gauge, and recognizing this we ought, I argue, to adapt ourselves, and to enquire how far, by cutting and contriving, we can spread the money out thin, so as to equip as large an area of famine country as possible in a more efficient manner than it is now equipped by metalled roads. Instead of this the usual policy is to accept it as an axiom that, once we make use of the word "railway" we ought to make the thing on one or other of the usual gauges. I used to try in Assam to drive this idea out of people's minds by using the term *railed roads*, instead of the term "railway" which connotes certain standards, or "tramway" which suggests a certain Act of the Legislature. I dare not say "railway," because at once somebody jumps up and says "Oh you must not make a break of gauge!" and moreover he thinks that he is entitled to a certain standard of comfort in his carriage. I dare not say "tramway", because the idea conveyed is that of a town tramway to pick up passengers. But take a road and put a pair of rails on it, and equip it with tidy economical little engines and waggons and open vehicles with seats, all infinitely better than the bandies and shigrams that every one in that country always used before, and you get a perfectly efficient machine for combating a famine, which in ordinary times may reasonably be expected to pay its way.

17. I am familiar with a considerable mileage of such railways on the Bombay side and they are thoroughly efficient in every way, were very cheap to build, are cheaply worked by the main standard gauge line to which they form feeders, and serve an enormous deal of traffic. I am familiar also with the Tezpur tramway in Assam, which is worked by its own staff though only 22 miles long, and is a most efficient and paying little railway. My Assam Note gives particulars of the cost of a lot of such lines, and of the cost at which they could, on the average, be built in that Province. In the famine districts of Madras they will in one respect be better built, because cheap ballast is available, whereas in most parts of Assam there is nothing but clay.

18. I would like to see this Government accept it as a definite line of policy that for famine protection purposes it is better to get the largest mileage possible of

a sufficiently good thing, rather than a very much smaller mileage of far too good a thing. Once such a principle was officially recognised it would be possible to enter into negotiations with the three great Railway Companies, about the terms on which they would be prepared in future to build and to work such lines, out of funds to be provided by Government. A Company like the South Indian or Southern Mahratta is greatly deterred from negotiating about a metre gauge line, through a non-paying country, owing to the knowledge that their whole business will be watered down by the non-paying length. Government, on the other hand, watches for every opportunity to foist non-paying lengths on to such Companies, on the terms of their being considered as integral parts of the whole concern.

19. We are at present greatly hampered in dealing with the Madras Railway Company, and shall be for the next ten years, owing to their being one of the few remaining old guaranteed lines over which our control is rather shadowy. The result is that we have heretofore impeded that Company when they desired to extend, knowing that we shall have to give a thousand rupees hereafter for every five hundred we now allow them to spend. We have therefore enabled the South Indian Railway Company to cross their trunk line on the metre gauge at several places, and they, reasonably enough from their point of view, argue that this is unfair, and that they ought to be allowed to develop their own territory. There is really no reason in the nature of things why they should not work metre gauge branches, as the Eastern Bengal State Railway and the Bombay-Baroda and Central India Railway do. But as the result of our ineffectual control over this Company, and of our very effectual control over the South Indian Railway Company, it has come about that we have made the South Indian Railway work all the metre gauge lines except those worked by the Southern Mahratta, a railway line which is equally effectively under the control of the Bombay Government. The Madras Railway Company are very sore about this, and perhaps from their point of view not unnaturally.

20. It seems to be taken for granted that when a famine line is run from an existing railway into a piece of unprotected country it must, if possible, run out again at the other side and make connection with the original or some other railway. This is doubtless sometimes very convenient indeed, and when the convenience can be secured without undue expenditure we may as well get it as not. But it sometimes results in "short circuiting," and in rendering a large mileage of a railway non-paying, a good thing in itself, but a thing that is usually strongly opposed by the short circuited railway administration. Again it often results in enabling one railway to tap the legitimate territory of its rival,—a thing naturally much resented by the rival.

21. Under a system of narrow gauge cheap famine railways of the "*railed road*" type there would be less temptation to penetrate right out at the other side of a district once we had entered it. Such lines would merely be looked on as feeder roads to the main parent lines, and it would usually suffice that they should reach known centres of distribution and not attempt to get through. Thus Námakkal, for example, or Rayadrug or Pondugal could be served from Salem, Bellary, or Narsaraopet without its being thought necessary to penetrate out to Karur or into the Mysore or Nizam's territory, and the same of many other projects; Badvel, for example, might be opened out either from the north or from the south, and similarly South-eastern Cuddapah.

22. I may now conveniently summarise my opinions on the subject of famine protection lines—

(*a*) Railways which the existing Railway Companies or branch line Projectors seem likely to take up, on the usual terms, need not be brought within the scope of a famine protective railway programme.

(*b*) There are certain railway schemes on the Board of Revenue's list which would apparently require more careful scrutiny and enquiry as to whether the whole course of their alignment is or is not the best that could be selected.

(*c*) There are certain lines which ought, almost necessarily, to be made on the same gauge as existing lines; chiefly for the reason that they will form integral parts of shortened through trunk lines.

(*d*) As regards feeder branches leading from railway stations on existing lines into very poor districts, which will usually not pay working expenses if made on one or other of the larger gauges, it is worth while considering whether we had not better make them on a 2′ 6″ gauge, which experience tells us can do as much work as any railway serving a sparsely populated district is likely, in the worst famine, to be called upon to do; especially when we recognise that we get for the same money a very much larger mileage, and can therefore, out of a limited famine grant, protect a very much larger area.

(*e*) It is, as a rule, to this latter class of railways that expenditure of famine insurance grants should be confined.

23. If I obtain a recognition by His Excellency the Governor in Council of the principles above enunciated, as being the right principles for guidance in the laying down of a famine railway programme, it would be an important part of the duty of the Consulting Engineer for Railways, next cold weather, to make special tours of inspection for the purpose of discussing matters with the Collectors of the districts liable to scarcity. This he would do after consultation with the Revenue Department and with the Board of Revenue. He would also, as a matter of course, take the Railway Companies' Agents into consultation and try to rough out terms with them for constructing and working such feeders. The result of all this would be a special report to Government, with plans and full particulars of a scheme of strictly famine, as apart from commercial, railways, to be gradually worked up to, say, in the next ten years, with rough estimates and an annual programme of expenditure. With this before us, we would be in a position to address the Government of India and to put forward a well-considered and consistent scheme. Without something of this sort our policy seems to me to be wanting in breadth, and to be likely to lead us into the adoption of what may not prove, when the next famine is before us, to have been best in the interests of the Presidency.

24. Until I learn whether the general principles above enunciated commend themselves to His Excellency in Council, I cannot with any advantage go into the question of the cost, mileage and relative advantages and disadvantages of the several railways referred to in the Board of Revenue's list.

Madras,
14th August 1897.

(Signed) F. J. E. SPRING,
Offg. Consulting Engineer for Railways.

Read—also the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), Mis. No. 7283, dated 7th September 1897:—

Read—the following letter from the Deputy Collector of Jammalamadugu Division, to the Collector of Cuddapah, dated 7th August 1897, Ref. No. 3311-Rev.:—

Adverting to your footnote Ref. on Cur. No. 6869, Revenue, dated the 27th October 1896, I have the honour to submit as follows.

2. A metre gauge railway from Kalikiri station on the South Indian Railway line to Yerraguntla on the North-West branch of the Madras Railway having been proposed by the Collector in his letter, Disposal No. 2937, Revenue, dated 8th July 1896, to the Board, the extension of this line to Proddatur and onwards to Nandyal on the Southern Mahratta Railway in the Kurnool district would complete an integral system of communication, whereby the country through which it will pass will be opened up and rendered easily accessible for famine protective and also for commercial purposes.

3. There is no doubt whatever, for want of facilities of communication such as a railway alone can afford, the country to be served by it is not a little affected by high prices of food-grains and even positive dearth of the same.

4. The country through which the proposed extension from Yerraguntla will pass is within the limits of the Proddatur and Jammalamadugu taluks, is of a gently undulating character and such as will not necessitate any costly cuttings and costly

engineering works, with the exception of a bridge across the Pennéru and, perhaps, also the Kundu river. While it is not possible to avoid construction of the former bridge, the construction of the latter bridge will depend a great deal on the alignment of the proposed extension, which is for the professional Engineering department to decide. At Proddatur the Pennéru river is very broad and so it would be well to select a site higher up the river, somewhere near Ramaswarampett, for the bridge across the Pennéru, as the river in these parts is much narrower than at Proddatur and a comparatively small bridge of a few spans would meet requirements.

5. The proposed railway will pass through an extensive country consisting for the most part of black-cotton soil. As the course of the line must very greatly depend on the gradients and shortness of distance, it is not possible to state here exactly the villages through which it will skirt, but it can be stated with some accuracy what village limits (Revenue village areas) will be touched. In the Proddatur taluk the village limits touched will be (1) Rameswaram, (2) Dorasanipalle, (3) Peddasettipalle and (4) Rangasayapuram, and in Jammalamadugu taluk, the village limits of (1) Peddapasupula, (2) Uppalapad, (3) Venkatapuram and (4) Gopalpur. I would include also Jammalamadugu which is an important centre. The line will have, I believe, to be slightly inclined towards Jammalamadugu town, and I do not think it will be prohibitive to do so. Thus Jammalamadugu town also an important station will be rendered accessible. But the villages to be fixed as railway stations will depend upon the distance according to alignments and also other considerations such as suitableness of site, water facility including quality thereof for boilers, &c., all of which can only be decided by railway experts.

6. The country north of the Jammalamadugu taluk to Nandyal is included in the Kurnool district.

7. I conferred with the Head Assistant Collector, Kurnool, on the advisability of the proposed railway extension up to Nandyal, and he considers that the railway will be serviceable especially for famine protection. He told me that at present famine relief operations were being carried on in the country near the northern limits of the Jammalamadugu taluk and south of the Southern Mahratta line passing through Nandyal, in proof.

8. I concur with the Head Assistant Collector, Kurnool, in his aforesaid view.

9. I would however suggest that the proposed extension be carried on northwards to the city of Hyderabad, the capital of the Nizam. I saw it mentioned in the Bombay newspapers that a metre gauge railway has been sanctioned to be constructed from Hyderabad (Deccan) to Munmar on the Jubbalpore branch of the Great Indian Peninsula Railway and named the Hyderabad-Gódávari Valley Railway. So that when this railway is completed and also the proposed extension from Yerraguntla to Nandyal and on to Hyderabad, there will be through communication by metre gauge railway from Tuticorin to Munmar.

10. I have no doubt that the proposed extension, together with the further extensions as stated in the preceding paragraph, will prove a paying concern, not to speak of capital utility as a famine protective work. As the passenger fares and goods charges on metre gauge lines are much less than those on standard gauge lines, the former lines will be necessarily resorted to for both kinds of traffic, and so the proposed metre gauge line from Tuticorin to Munmar will prove a formidable competitor with the Madras and Great Indian Peninsula Railways on the standard gauge.

11. The proposed extension from Yerraguntla is likely to attract the traffic from the Villupuram-Guntakal line, which has now to go the circuitous length of two sides of a triangle to the Nandyal side, whereas by the proposed extension, the distance to be traversed will be much less—involved in only the third side of the triangle.

12. A statement furnishing the information required by the Government of India for the tract (within the Jammalamadugu division) to be served by the proposed extension from Yerraguntla towards Nandyal is appended.

13. If I may be permitted to mention here as regards the financing of the proposed extension, I would suggest that the required capital be raised in silver in this country. Municipalities, &c., in India have been able to raise large capital sums on 4 per cent. interest per annum. I think that the same course may be adopted in the present connection also. There seems to be no decided advantage in borrowing in sterling. On the contrary, borrowing in sterling seems to be disadvantageous, as the rate of exchange is a fluctuating quantity and, as such, constitutes no certain basis for calculation that higher rate of exchange will not have to be paid from time to time than the rate at which the sterling loan might have been incurred. From my little insight of exchange transactions, I believe that the market rate of exchange depends also on the rings formed by capitalists and, as such, dependent upon them as well. Whereas if the cost of the proposed railway be met by rupee loan a guarantee of 4 per cent. annual interest (payable half-yearly as usual) will only be needed, and it will not be subject to fluctuations, which, I think, is a great point to be gained from an economical point of view.

Read—also the following endorsement thereon from the Collector of Cuddapah, Dis. No. 5069-Rev., dated 27th August 1897 :—

Forwarded to the Board with reference to paragraph 2 of its Proceedings, Mis. No. 4986, dated 14th October 1896.

2. I consider that efforts should be restricted at present to connecting Ráyachóti with the railway as proposed in my letter, R.C. No. 227-F., dated 9th August 1897, quoted in Board's Proceedings, Mis. No. 6556, dated 17th August 1897.

3. The small portion of line is most urgently wanted.

Resolution—Mis. No. 7283, dated 7th September 1897.

Submitted to Government, Revenue Department, in continuation of Board's Proceedings, No. 397, dated 25th May 1897 (revised), and No. 6556, dated 17th August 1897.

(True Copy and Extract.)

(Signed) R. V. SRINIVASIAR,
Secretary.

To the Secretary to Government, Revenue Department.

Read—again the following G.O., Mis. No. 5236, Revenue, dated 7th October 1897 :—

Read—again G.O., Mis. No. 4005, Revenue, dated 2nd August 1897.

Abstract.—Transferring to the Public Works Department (Railway Branch) Board's report on protective lines of railway.

Read—also Proceedings of the Public Works Department (Railway Branch), No. 1341 D., dated 9th September 1897 (C. No. 7870 of 1897).

Abstract.—Transferring to the Revenue Department, for disposal, letter from the Consulting Engineer for Railways, No. 112-O., dated 8th September 1897, forwarding a note on the Famine Railways in Madras and making certain suggestions for their construction.

Read—also Proceedings of the Board of Revenue (Revenue Settlement), Mis. No. 7283, dated 7th September 1897 (C. No. 7931 of 1897).

Abstract.—Submitting to Government, Revenue Department, endorsement from the Collector of Cuddapah forwarding copy of the Jammalamadugu Deputy Collector's letter containing proposals for the extension of railway line from Yerraguntla to Nandyal.

Order—Mis. No. 5236, Revenue, dated 7th October 1897.

The Government agrees with the Board and the Officiating Consulting Engineer that the projects numbered I, II, IV, V and VI are the most important for famine protective purposes.

2. Before arriving at a decision on the light railway policy advocated by the Officiating Consulting Engineer, the Government desires to consult available expert opinion on the subject. Mr. Spring's notes will therefore be communicated to the Agent and Manager and to the Chief Engineer of the Madras Railway, and they will be asked to favour the Government with their opinions as to the gauge to be adopted for the railways selected as protective lines.

(True Extract.)

(Signed) G. STOKES,
Ag. Secretary to Government.

To the Public Works Department (Railway Branch),
with enclosures to C. No. 7870, a copy of Board's Proceedings in C. No. 7931 and notes in original.
„ the Board of Revenue (Revenue Settlement, Land Records and Agriculture).

Order—No. 169, Revenue, dated 22nd March 1898.

Miscellaneous.

On further careful consideration, the Government, in modification of the views expressed in G.O., Mis. No. 5236, dated 7th October 1897, has decided to select the following lines as best suited for construction as Famine Protective Railways:—

Order of preference.	Number on map.	Railway. From	Railway. To	Length in miles.
1st	I	Hospet	Kottur	35
2nd	V	Kalikiri	Ráyachóti	32
3rd	VI	Morappur	Dharmapuri	16
4th	VI	Tiruppattúr	Krishnagiri	25
5th	II	Bellary	Rayadrug	33
6th	XIII	Narasaraopet	Pondugul	45
			Total mileage ..	186

2. The following letter will be addressed to the Government of India.

(True Extract.)

(Signed) G. S. FORBES,
Ag. Secretary to Government.

To the Board of Revenue (Revenue Settlement, Land Records and Agriculture).
„ the Public Works Department (Railway),
with ten copies of letter to India and original notes.

Exd. C. Parthasarathy.

1899
REVENUE DEPT.
Encl. No. 4
Cur. No. 675

1898.

DEPARTMENT OF REVENUE AND AGRICULTURE.

From

The Government of Fort St. George.

Recd. } 1898, *Enclosures*

Regd. } 1898, *Spare copies*

Letter, No. 169A, 22nd March 1898.

MARCH.

Forwarding programme of a limited number of famine protective railways in the Madras Presidency.

REVENUE DEPARTMENT.

From

The Hon'ble Mr. G. S. FORBES, I.C.S.,
Acting Secretary to the Government of Madras,

To

The SECRETARY to the GOVERNMENT OF INDIA,
Revenue and Agricultural Department,

Dated Fort St. George, 22nd March 1898.

Sir,

I am directed to acknowledge the receipt of your Revenue and Agricultural Department Circular letter, No. 18–31–1, dated the 18th September 1895, and to explain that the great delay which has occurred in replying to it must be ascribed to the lengthened enquiry and protracted consideration which the importance of the subject rendered necessary. In that letter the Government of India asked that they might be furnished with a list of a limited number of railway projects for this Presidency, arranged in order of their protective value, in reference to the remarks contained in your paragraphs 2, 3 and 4. It was explained that the tracts of country indicated by the Famine Commission of 1878 as needing protection, together with certain other tracts since admitted to the list, had either already been or would soon be effectively protected, and that it is now necessary to obtain sanction to the classification of other lines as protective, in order that the Famine Fund may be utilised in their construction.

2. Having enunciated the principles on which a railway might legitimately be classed as protective, the Government of India expressed a desire to arrange protective railways in a list in order of their efficiency for the purpose in view, as measured in accordance with these principles, and to confine contributions from the Famine Fund to the particular works heading the list for the time being. The Government of India point out that feeder lines acting as minor distributaries to a main line may be of great protective value, not only in cases of drought, but also where failure of crops is caused by excessive rainfall when carriage by road becomes difficult or impossible, and when, as often happens, carts cease to be available owing to starving cattle having been driven off to a distance for pasturage. It is also pointed out that, though provision for distribution must ordinarily precede provision for collection, yet cases may occur in which it may be more important to improve the machinery of collection than that for distribution.

3. After an attentive perusal of the remarks of the Government of India and a protracted enquiry in the Revenue and Public Works Departments of this Government, His Excellency the Governor in Council desires now to put forward a limited list of lines which, in this Presidency, most fully satisfy the conditions above enunciated. From the large number of railway schemes which came under review in the course of this enquiry, the majority have been eliminated; some, because they appear now to be within measurable distance of inception without aid from the famine grant; others, because there seems reason to believe that the Railway Companies most interested are likely to promote their construction for reasons other than famine reasons; and the rest, because the time does not seem ripe to bring them forward. Moreover, many of the schemes were found for one reason or another not to fulfil the conditions laid down by the Government of India as justifying their being brought upon the Famine Railway category.

4. The leading idea throughout has been to select the areas most liable to give rise to anxiety in times of scarcity, and then to connect the actual trade distributing centres of such areas with the nearest railway; if practicable, for reasons of economy, along an existing road. It has been borne in mind that the share of the famine grant which will be made available for the several Presidencies and Provinces is not, from a railway construction point of view, likely to be large and it has been thought best to obtain a considerably greater mileage of a sufficiently good thing, rather than a comparatively small mileage of the best possible thing, and so, in the next few years, to secure protection for as many of the famine areas as possible. Thus, the adoption for these short famine branch lines of one or other of the narrower gauges appeared to be the wisest policy; and so, after full consideration of the work that can be done by both gauges with properly designed rolling stock, and upon information of the nature of the rolling stock of the Barsi and Howrah tramways, it has been decided that the two-foot gauge will fully meet all the requirements, even in famine times, of the list of lines now sent forward. For not only does it seem certain that in times of scarcity the narrow gauge is quite capable of throwing a sufficiency of food into such sparsely-peopled tracts, but also that, in ordinary years, the more cheaply the railway can be built, the more likely it is to give some return for its capital cost over and above its working expenses. The possibility also of laying the narrow gauge along existing roads with little or no alteration of bridges, and consequently at between Rs. 20,000 and Rs. 25,000 per mile, has largely influenced this Government in coming to the decision arrived at.

5. In the accompanying map of this Presidency the railway projects which have come within the scope of the present enquiry are indicated by the thin red lines. The selected projects, or selected portions of or variations of them, are indicated by thickening the red lines. Their places in order of the preference accorded to them by this Government are as follows:—

Order of preference.	Number on map.	Railway. From	Railway. To	Length in miles.
	I	Hospet	Kottur	35
1st	V	Kalikiri	Rayachoti	32
2nd	VI	Morappur	Dharmapuri	16
3rd	VI	Tirupatur	Krishnagiri	25
4th	II	Bellary	Rayadrug	33
5th	XIII	Narsaraopet	Pondugal	45
6th			Total mileage ..	186

6. It is not easy to estimate to what extent the money which was spent during former famines, on works and gratuitous relief in the districts which it is now proposed to protect, might have been saved if the lines that are now projected had been in existence. The question is complicated by the fact that in many cases it is not so much that the grain is absent, as that the means of paying for it cannot be earned by the hereditary labouring classes on whom falls the chief brunt of high prices. But a good idea of the importance of opening up the tracts now selected, by connecting their chief distributing trade centres with the neighbouring main lines of railway, may be inferred from the statement that, in the famine years of 1876—78, a sum of about 70 lakhs was spent upon relief works, and of about 30 lakhs on gratuitous relief, in the taluks which it is now proposed to supply with improved communications,—communications, which will not, it is estimated, cost much more than half of the sum so spent; and which will, there is every reason to hope, be fructuous in ordinary years by reason of their cheapness.

7. The six projects shall now be treated of in regular order, an attempt being made to indicate, in each case, the reasons for the selection. The appendices attached to this letter (Appendices I—IV) contain the statistics which have been collected as the result of the recent enquiries, and it is hoped that they will be found to contain all the information required by the Government of India to allow of their forming a judgment as to the wisdom of the selections. This Government desire that it should

be understood that, though the programme now put forward appears to be the best, yet it is liable to modification if it should turn out that certain other lines, the Kurnool branch for example, are less likely to be promoted by companies than there is now reason to anticipate. It should also be understood that the present list is not exhaustive, but is merely the limited list that has been asked for by the Government of India.

8. *The Hospet-Kottur Railway.*—The first item on the preference list is a line about 35 miles in length, southwards from Hospet, a station of the Southern Mahratta Railway, to Kottur, a distributing centre for four or five taluks which give much trouble in famine times. It has from time to time been proposed that a line about 66 miles in length should cross from Hospet southwards to the Mysore State Railway at Devangeri. It has been urged that the southern part of this line would form a valuable feeder to the Mysore line, while its northern part would provide the protection so much needed in Eastern Bellary. After full consideration, however, it has been decided that it is expedient that famine requirements must have first consideration, and that all that is necessary for famine purposes being 35 miles of a two-foot gauge railway from Hospet to Kottur, the Government of India should be asked to admit this short line as of primary importance in the famine railway scheme. It has therefore been accorded the first place on the list now submitted.

9. *The Kalikiri-Rayachoti Railway.*—A tract which in times of scarcity gives, perhaps, nearly as much cause for anxiety as that just referred to, is the central part of the Cuddapah district lying between the Rénigunta-Pakala-Dharmavaram section of the South Indian Railway and the North-West section of the Madras Railway. Various schemes, marked No. V on the map, have from time to time been put forward for crossing this tract as well as a part of the Kurnool district, by a line running southward from Nandyal station of the Southern Mahratta Railway through Yerraguntla station of the Madras Railway to Kalikiri on the South Indian Railway. But, on a review of all the local circumstances of the districts intended to be served by such a line, it has been decided that all that at present is necessary, in the interests of famine protection, is a branch on the two-foot gauge, about 35 miles in length, from the South Indian Railway in the neighbourhood of Kalikiri, or Piler, to Rayachoti. This line has been given the second place in order of preference.

10. *The Tirpatur-Krishnagiri Ry.* (and the *Morappur-Dharmapuri Ry.*).—North-western Salem has always, in times of scarcity, given rise to much anxiety. It has from time to time been proposed to make it safe by a line from Bangalore through Hosur to Morappur station on the Madras Railway. This Government, however, are of opinion that all immediate famine purposes will be sufficiently well served if its two chief centres of distribution, Krishnagiri and Dharmapuri, are connected with the Madras Railway;—the former by 25 miles of a two-foot line to Tirupatur, and the latter by 16 miles of a two-foot line to Morappur station, both lines being, as far as possible, laid on district roads. It would appear from a glance at the map as if the country served by the Jalarpet-Krishnagiri line were already sufficiently near to the Bangalore branch of the Madras Railway to be protected thereby. But such is not the case, for a roadless range of hills intervenes.

11. *The Bellary-Rayadrug Railway.*—The south-eastern parts of Bellary district, which this line is intended to serve, draw their supplies in ordinary years from the Anantapur side, from places which in famine years are unable to afford them the grain which they need for themselves. It is then most desirable that their trade centre, Rayadrug, should be connected with Bellary town, which is a large enough centre of distribution to be trusted not to fail of supplies now that it is connected with the Kistna delta. With a view of serving Rayadrug as well as the parts of Mysore territory which lie south of it, schemes have been put forward for 110 miles of line to connect Bellary with Holalkiri. But this Government considers that for famine-relief purposes Rayadrug and its adjoining taluks will be sufficiently safeguarded if the proposed 33 miles of two-foot gauge line be laid southward, for the most part along existing roads, from Bellary to Rayadrug. This project has been allotted the fifth place in the programme.

12. *The Narsaraopet Pondugal Railway.*—The north-western part of the Kistna district of which the centre of trade is Pondugal, on the border of the Nizam's territory, is always a cause of apprehension in famine years. The tract proposed to

be served is isolated from the Bellary-Kistna section of the Southern Mahratta Railway by a line of hills, through which passes the road on which it is now proposed to lay 45 miles of a two-foot gauge railway.

13. Of the six lines of railway which have now been put forward, aggregating 186 miles in length, and estimated as likely to cost at most 50 lakhs, the first from Hospet to Kottur, the fifth from Bellary to Rayadrug, and the sixth from Narsaraopet to Pondugal, would be branches of the Southern Mahratta Railway. The third and fourth from Morappur to Dharmapuri and from Tiruppattúr to Krishnagiri would be branches of the Madras Railway. The second, from Kalikiri to Ráyachóti, would be a branch of the South Indian Railway. It seems probable that it would be in every way best that the several lines should be worked by the agency of the parent lines of which they will form feeders. The working of such feeders has not been discussed with the authorities of the Southern Mahratta Railway or of the South Indian Railway, but the Agent of the Madras Railway Company has expressed his concurrence in the wisdom of the adoption of a policy of narrow-gauge feeders, and has put forward some valuable suggestions as to the best localities for such lines, most of them, however, of commercial rather than of famine interest, and likely therefore to come to maturity without the aid of the famine grant, and has expressed his willingness to work them. There seems no reason to doubt the readiness of the Southern Mahratta Railway and of the South Indian Railway similarly to agree to undertake the working of narrow-gauge feeders. The question of the building of such lines is less easy, and it may be that it will be considered best that, for reasons of uniformity and economy, all the selected narrow-gauge feeders should be built, one after the other, by a small selected staff, and handed over when built to the parent line. None of the lines have, as yet, been properly surveyed, and if the policy now put forward for the acceptance of the Government of India is agreed to, arrangements must be made for the regular survey of them and the preparation of estimates. So far as can be judged from what is reported on the subject, a type of railway similar in character to the Howrah-Ampta and the Howrah-Shewankali tramways would be all that could be desired; greater attention, however, being given in the case of famine lines to goods stock, rather than to passenger vehicles which in the case of the Howrah lines are of the greater importance.

14. From a perusal of the figures of expenditure under the accounts head *Famine Relief and Insurance* since the year 1890–91, it would appear that, the entire expenditure against this head works out to 100 or 150 lakhs annually, and that, of this, about one-half is in ordinary years allotted for the construction of protective railways. It does not seem too much to hope for that this Presidency may count upon a steady grant, for the next five or six years, of 10 lakhs annually from this source; and if hope were held out of such a grant being likely to be steadily forthcoming until the completion of the programme now put forward, and of such extension of it as may afterwards be concurred in by the Government of India as necessary, it would be possible to make an economical forecast of expenditure so as to ensure the attainment of the object in view. What the object in view is has already been fully explained, but I am instructed here to repeat that it is the efficient protection of those tracts which give rise to the most anxiety in times of scarcity, and that at the minimum of capital outlay consistent with securing this result.

15. In conclusion, I am to express the hope of His Excellency the Governor in Council that the programme which is now put forward may meet with the approval of the Government of India, and that this Government may be enabled to inaugurate it as early as may be practicable.

I have the honour to be,
Sir,
Your most obedient servant.

(Signed) G. S. FORBES,
Ag. Secretary to Government.

APPENDIX I.

List of proposed protective Railways.

Arranged in the order of their protective value.

Protective Railways.		Tract traversed.		
Serial number.	Designation.	Districts.	Groups of taluks within British territory.	Principal villages or towns.
1	2	3	4	5
1	Hospet-Kóttúr	Bellary	Hospet	*Hospet.*
			Kudligi	Chittavadigi.
			Hadagalli	Narayandevarakeri.
			Harpanahalli	Kóttúr.
2	Kalikiri-Ráyachóti ..	Cuddapah	Vayalpad	Kalikiri.
			Ráyachóti	Kalakada.
				Ráyachóti.
3	Morappur-Dharmapuri ..	Salem	Uttankarai	Morappur.
			Dharmapuri	Dharmapuri.
4	Tiruppattúr-Krishnagiri..	Do.	Tiruppattúr	Tiruppattúr.
			Krishnagiri	Krishnagiri.
5	Bellary-Rayadrug ..	Bellary	Bellary	Bellary.
			Rayadrug	Hirekalu.
				Rayadrug.
6	Narsaraopet-Podungal ..	Kistna	Narsaraopet	Narsaraopet.
			Vinukonda	Nekarikallu.
			Sattenapalle	Pidugurrala.
			Palnad	Dachepalle.
				Podungal.

APPENDIX II.

Statement showing the population, arable, cultivated and protected areas in the several districts.

Serial number.	Designation of the protective railway.	District.	Taluk.	Population in 1891.				Percentage of area.				Area protected in ordinary seasons under				Rainfall in inches.		
				Per square mile.		Per 1,000 acres.		Arable of total.	Occupied of arable.	Cultivated of occupied.	Cultivated of total.	Minor tanks and channels.	Wells and dorruvs.	Large works.	Total.	Percentage of area cultivated.	Average.	Maximum.	Minimum.
				Rural.	Total.	Arable.	Cultivated.					Acs.	Acs.	Acs.	Acs.				
1	Hospet-Kóttúr ..	Bellary ..	Hospet	..	171	379	912	82	48	86	34	7,600	1,600	8,700	17,900	16·6	26·36	47·90	10·32
			Kúdligi	..	109	215	637	81	36	88	26	5,800	3,600	..	9,400	6·2	23·93	37·65	11·87
			Hadagalli	..	178	271	534	89	59	95	51	1,700	100	..	1,800	0·9	21·53	33·51	6·43
			Harpanahalli ..	..	136	253	467	86	59	72	45	3,200	400	..	3,600	1·9	23·12	35·22	10·05
2	Kalikiri-Ráyachóti.	Cuddapah ..	Vayalpad	..	153	558	1,044	43	67	83	24	31,300	3,000	..	34,300	28·6	27·97	47·60	9·91
			Ráyachóti	..	114	510	748	34	74	90	24	16,000	4,900	..	20,900	13·8	25·91	47·23	4·50
3	Morappur-Dharmapuri.	Salem ..	Uttankarai	..	152	513	872	44	66	89	26	7,100	700	..	7,800	6·1	32·72	50·15	15·61
			Dharmapuri	..	190	616	953	47	72	93	32	11,800	2,000	..	13,800	9·6	30·48	43·25	8·15
4	Tiruppattúr-Krishnagiri.	Do. ..	Tiruppattúr	..	350	1,429	1,684	41	66	84	34	8,700	1,800	..	10,500	15·2	37·18	56·25	22·70
			Krishnagiri	..	231	657	963	66	84	90	50	12,100	2,000	1,700	15,800	14·5	31·39	50·35	15·85
5	Bellary-Rayadrug ..	Bellary ..	Bellary	120	188	335	1,002	88	81	91	65	1,300	1,700	3,600	6,600	3·6	18·59	31·37	7·23
			Rayadrug	..	109	251	520	80	68	86	47	11,200	5,000	..	16,200	8·4	19·06	30·55	8·10
6	Narsaraopet-Podungal.	Kistna ..	Narsaraopet	..	220	438	584	83	91	78	60	2,800	1,000	..	3,800	1·46	30·20	43·70	8·10
			Sattenapalle	..	194	426	576	69	94	78	52	1,200	..	..	1,200	0·50	29·61	52·62	13·20
			Palnad	..	133	379	484	53	81	97	42	2,100	200	..	2,300	0·81	29·04	47·00	11·24
			Vinukonda	..	128	352	540	54	82	79	35	2,300	2,300	..	4,600	3·01	27·33	48·44	9·96

APPENDIX III.

Famine History.

Of the taluks and tracts to be protected.

1. *Bellary—Projects Nos.* 1 *and* 5.—The earliest famine recorded in the old district of this name, which included the present Anantapur district, was that of 1792–93; and since the commencement of the present century there have been famines in 1803, 1824, 1833, 1853–54, 1866, 1876–78, 1891–92 and in 1896–97. The district suffered severely during the famines of 1824 and 1833. The famine of 1854 was also very severe; for about nine months, more than 50,000 people, including those that flocked in from the Nizam's territory, obtained relief by employment on works. In the famine of 1866–67, 10,422 persons were employed on works and 13,130 were relieved gratuitously on the average during 11 months, the maximum reached in any one month being 3·2 per cent. of the population. In the famine of 1876–78, the average number of persons relieved in the taluks now forming the Bellary district during 22 months from December 1876 to September 1878 was 147,653, of whom 99,521 were employed on works and 48,132 relieved gratuitously. The maximum number relieved in any one month was in August 1877, when 50·99 per cent. of the population in 1871 were in receipt of relief. In the famine of 1891–92 distress was not severely felt in the area comprised in group No. 1. In the area comprised in group No. 5, relief had to be provided for ten months ending September 1892 in the Bellary taluk, and for five months ending April 1892, in Rayadrug. In the first-mentioned taluk an average number of 1,543 people were employed on works during ten months, and five relieved gratuitously for 3 months; in the second, 184 persons were, on the average, employed on works. During the famine of 1896–97, no regular relief works were opened in the Harpanahalli taluk of group No. 1. A small amount was spent on improvement of water-supply. In the remaining three taluks of that group, 8,373 persons were, on the average, employed on relief works for a period of 12 months and 2,302 persons were relieved gratuitously for 11 months. As regards group No. 5, very little relief was found necessary in the Rayadrug taluk, but in the Bellary taluk, on the average, 8,473 persons were relieved on works for 12 months, and 2,443 persons gratuitously for a period of 13 months.

2. *Cuddapah—Project No.* 2.—Between the years 1800 and 1802 considerable distress prevailed in the Cuddapah district where there were also famines in the years 1823–24, 1833 and 1876—78. In the famine of the years last mentioned the district suffered most acutely. The famine of 1891–92 was also severe. During the famine of 1876—78, 57,760 persons were, on the average, employed on works for 22 months ending September 1878 and 30,173 men, on the average, relieved gratuitously, the maximum relieved in one month, *i.e.*, in September 1877, being nearly 22 per cent. of the population in 1871. But information in detail of taluks is not available. During 1891–92, 1,280 persons were, on the average, employed on works in the Rayachóti taluk for 16 months, and 451 persons in Vayalpad for 8 months. Sixty-one persons were gratuitously relieved in both the taluks for 3 months. During the famine of 1896–97, these two taluks were not affected, though certain other taluks of the district were.

3. *Salem—Projects Nos.* 3 *and* 4.—In the Salem district there was famine during the years 1833 and 1866–67, 1876—78 and in 1891–92. In the famine of 1866–67, an average number of 420 people were employed for nine months on works and 3,345 relieved gratuitously. During the famine of 1876—78, an average number of 37,375 persons were, for 22 months, employed on works and 59,634 relieved gratuitously, but details for taluks are not available. During the distress of 1891–92, no relief was given in the taluks of Tiruppattúr and Krishnagiri. In Uttankarai and Dharmapuri, relief works were opened for short periods.

4. *Kistna—Project No.* 6.—Of the districts that suffered from serious dearth between November 1790 and November 1792, Kistna was one where deaths from starvation were most numerous. In 1823–24 the district again suffered severely and public employment was provided for the relief of the distressed. In 1832—34 the "Guntúr" famine occurred, which covered the country with human bones from Ongole to Masulipatam and reduced the area of cultivation to the lowest limit. A large expenditure was incurred on works and relief depots were also opened. This famine led to the construction of the Kistna anikat which has brought a large portion of four taluks under irrigation. Since then, the district has for the most part escaped from famine, but in 1876—78, it suffered from the great famine, when the average number of persons relieved during 22 months from December 1876 to September 1878 was 4,852 or 0·3 per cent. of the population in 1871. Of these 2,044 were relieved gratuitously and 2,808 were employed on works. The maximum number relieved in any one month was 25,095 in September 1877. In 1892 some anxiety was felt regarding the upland portion of the district on the south-western frontier adjoining Kurnool and Nellore. Palnad and parts of the adjoining taluks suffered, but not to the extent of necessitating relief operations.

APPENDIX IV.

Statement showing expenditure on account of famine relief.

Serial number.	Designation of protective railway.	Tract traversed.		Expenditure during the famine of 1876–78.			Expenditure during the famine of 1891–92.			Expenditure during the famine of 1896–97.		
		District.	Taluk.	Gratuitous relief.	On relief works.	Total.	Gratuitous relief.	On relief works.	Total.	Gratuitous relief.	On relief works.	Total.
1	2	3	4	6	7	8	9	10	11	12	11	13
				Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	Hospet-Kóttúr	Bellary ..	Hospet ..	1,28,815	7,39,347	..	..	3,972	..	29,600	1,81,700	2,11,300
			Kudligi ..	2,32,388	6,46,614	..	..	..	..	2,300	27,000	29,300
			Hadagalli ..	1,55,701	6,80,222	..	94	94	..	9,500	1,16,000	1,24,600
			Harpanahalli ..	2,16,342	4,98,646	..	..	..	..	..	300	300
2	Kalikiri-Rayachóti ..	Cuddapah ..	Vayalpad ..	2,24,705	8,44,758	1,057	50	1,107	..	..	..	..
			Rayachóti ..	2,04,579	5,76,794	17,690	1,882	19,572	..	..	..	..
3	Morappur-Dharmapuri ..	Salem ..	Uttankarai ..	4,15,776	7,25,797	165	..	165	..	..	..	..
			Dharmapuri ..	7,17,543	11,33,543	1,189	..	1,189	..	..	..	..
4	Tiruppattúr-Krishnagiri ..	Do. ..	Tiruppattúr ..	..	..	..	..	..	..	..	..	..
			Krishnagiri ..	3,24,358	6,45,234	..	..	..	..	..	..	..
5	Bellary-Rayadrug ..	Bellary ..	Bellary ..	3,19,375	19,58,197	39,863	..	39,863	3,15,600	60,200	3,75,800	
			Rayadrug ..	1,77,819	7,27,782	1,713	..	1,713	300	600	900	
6	Narsaropet-Podungal ..	Kistna ..	Narsaropet ..	39,762	39,762	..	..	..	..	..	..	..
			Sattenapalli ..	3,248	3,248	..	..	..	..	..	..	..
			Palnad ..	3,503	3,503	..	..	..	..	..	..	..
			Vinukonda ..	27,675	27,675	..	..	..	..	..	..	..

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