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CONSTRAINTS ON AGRICULTURAL GROWTH IN A SUB-SISTENCE ECONOMY - A STUDY OF GODAVARI DISTRICT 1860-1890

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INTRODUCTION

The Coastal districts of Southern Andhra now present a picture of relative advancement and prosperity in agriculture. This advancement in terms of agrarian expansion, productivity, production and diversified cropping pattern owe not a little to the historical factors, of which provision of irrigation under the Godavari and Krishna anicuts (irrigation dams) from the mid-19th century played a decisive role. An attempt is made in this paper to trace the agricultural growth of the Godavari district in the post-anicut and pre-railway period and to comment on the partial realization of the growth-potentials and link it up with the constraints involved in a historical setting.

The specific objective of the enquiry are:

(1) to find out the impact of irrigation on agricultural growth of the district as judged by trends in:

a) total area under cultivation

b) area under wet

c) cropping pattern and

d) marketable surplus

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(2) to enquire whether agricultural tax (land revenue and water rate) during this colonial period was high enough to slow down the agrarian expansion and growth,

(3) to enquire whether a supporting infra-structure, particularly transport that induces and sustains agricultural growth had been created, and

(4) to suggest the broad contours of transition in a subsistence economy.

The area of study is the (old) Godavari district which comprises the present West Godavari, East Godavari and portions of the Visakhapatnam district. The district was formed in 1859-60. It consisted of 14 taluks viz. Peddapuram, Rajahmundry, Ramachandrapuram, Amalapuram, Narasapuram, Bhimanaram, Tanuku, Ellore, Yernagudem, Polavraram, Chodavraram, Bhadrachalam, and Cocanada (Kakinada). The district had five classes of soil viz alluvial, permanently improved, black regar, red ferruginous and arenaceous. The deltaic character of the district accounts for the large extent of alluvial soil, the most valuable of all. It is found also in the Peddapuram taluk through which the Yeleru flows. The red ferruginous soil is the next most extensive and occurs mostly in uplands. Black regar is the next and occurs in all the taluks except Amalapuram and Chodavaram. The taluks that contain it most are Ellore, Bhimanaram, Rajahmundry and Yernagudem. The arenaceous soil, the worst of all, comes last in the extent and occurs mostly along the coast in Amalapuram and Narasapur taluks. The permanently improved soil occurs here and there in small areas and is insignificant in extent.

An anicut (irrigation dam) across the river Godavari was constructed during the period 1847-1852 at Dhawaleswaram in the old Rajahmundry district*.

* Godavari anicut works: Date of commencement - 1st March 1847
Date of completion - 31st March 1852

A net work of irrigation channels was built in the three delta sections viz. the Eastern, the Central and Western sections. The transition in the subsistence agriculture of the district is sought to be traced from 1860 onwards. But before we do so a word of explanation about the Pre-anicut period.

Section I

AGRARIAN EXPANSION AND PADDY CULTIVATION

1.1 THE PRE-ANICUT PERIOD

The pre-anicut agricultural conditions of the Godavari (Rajahmundry) district were characterised by stagnation and decay. Northern Circars in general and the Rajahmundry district in particular witnessed falling revenue and miserable economic conditions of the inhabitants. Bad seasons, zamindari-misrule, severe burden of taxation on the cultivators, heavy competition from cheap rice-imports from Arracan (Burma), depression in agricultural prices, decay of handloom industry, devastating famines, declines in population, and utter neglect of irrigation and transport were the major features of the period.1/

Cap. A.T. Cotton, a civil engineer who was asked to examine the Godavari delta, had after a careful study submitted two reports to the Government, the first on 12th August 1844 and the second on 17th April 1845. In his first report Cotton studied the feasibility of constructing an irrigation-dam and the probable results that would follow. In the second report he made detailed estimates of the cost of the anicut and a general statement of the estimated cost of the system of channels and other works for the distribution of water. The area which was to be irrigated by means of the proposed anicut consisted, with the exception of a strip of sandy land bordering on the sea, of a noble expanse of rich alluvial land fit for almost any cultivation, if well supplied with water. It was estimated to contain about 13 lakhs acres, out of which deducting one fourth for sandy tracts near the sea, sites of villages and channels

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1/ For details see G.N. Rao "Stagnation and Decay of Agricultural Economy of Coastal Andhra", Arthavijnana, September 1978.

of rivers, there would remain 10 lakh acres fit for cultivation with paddy or sugarcane.[2] As for the capabilities of the land and of the resources of the river Cotton felt that there was a vast extent of fertile soil not less than 8,20,000 acres within the district of Rajahmundry and nearly as much in Masulipatam to which the water might be applied. He hoped that after the construction of the anicut, the land revenue could increase to the extent of Rs.20 lakhs and the produce to Rs.124 lakhs in the Government (Ryotwari) land alone. He was totally confident about the favourable results of the anicut.

> "If it be asked how this great sum is to be obtained, the answer is by simply converting the water of the Godavari into money, instead of letting it run into the sea. At this moment water is paid for by the sugar growers at about one rupee for 800 cubic yards, the cost of raising it by artificial means. There are now 4,20,000 cubic yards of water per hour flowing, those tracts which are situated near the present channels but which receive no benefit from them at all. It will put a famine in this or the neighbouring districts out of range of possibility. It will provide immediately two or three most important lines of water communication from Rajahmundry through the heart of delta to the sea available at all seasons".[3]

The anicut on the Godavari river was built with the following objectives.[4]

2/ Henry Morris, A descriptive and historical account of Godavery, 1878.

3/ Morris op.cit.,

4/ A.T. Cotton's Report dated 17th April, 1845

i) Laying the foundation for the complete irrigation for a rice crop of the whole delta of the Godavari and part of the Krishna in all, 3,000 square miles or nearly 20,00,000 acres.

ii) Opening the way for the conversion of the Delta from a mere grain district to a sugar plantation,

iii) A complete system of internal navigation, intersecting the whole of the delta, to be established throughout the year, and

iv) to increase the value of the produce from the present Rs.30 lakhs to Rs.200 lakhs, etc.

1.2 THE PERIOD UNDER STUDY

Although the construction of the Godavari anicut was completed by 1852, a discussion on the initial impact of irrigation on agrarian expansion is left out of the present exercise for two reasons. Firstly, it needs a detailed explanation in terms of a heated controversy between the irrigation engineers on the one side and the Revenue Officials on the other. The former tried to portray a higher increase in productivity and a faster agrarian expansion stimulated by irrigation and the latter were left unimpressed by such a phenomenon Both the parties, however, admitted that a reliable set of complete data on cultivated area was not available. Secondly, the three districts of Rajahmundry, Masulipatam and Guntur were merged into two larger districts of Godavari and Kistna in 1859/60. Because of these boundary changes an assessment of the impact in terms of expansion of gross acreage, cropping pattern etc. overtime becomes difficult if pre-1860 districts are taken into account. Hence the

analysis starts with 1860 and ends by 1890. A word of explanation about the terminal year. Although considerable agrarian expansion had taken place in the Godavari district during the four decades commencing from 1852 onwards an adequate transport system was conspicuous by its absence. Also, rail roads were not laid down in the Coastal Andhra till 1891/92. Hence the post-anicut and pre-Railway period is chosen for a detailed study. In other words, the impact of irrigation - a major stimulus to the agrarian economy of the Godavari district - is sought to be analysed for a period not endowed with an adequate transport system. Thus the focus of the paper is agrarian expansion and growth under a colonial regime which was less sensitive to the aspirations of the peasantry.

1.3 PROGRESS OF CULTIVATED AREA AND WET AREA

Agricultural progress is sought to be measured in terms of expansion of area under cultivation - especially area under paddy - and the diversification of the cropping pattern. However, when one tries to get an overall picture of the district, one runs into difficulties in so far as continuous series of data on a particular pattern allowing comparability over time is not available for the three decades. The chief sources of information for this item are the annual Reports on the Administration of Madras Presidency. From 1859-60 to 1876-77 total 'Government' or 'Ryotwari' land under cultivation was classified as 'wet' and 'dry' The classification of 'garden' lands was abandoned in 1865/66. This series pertains only to 'Government' land and data on Inam and zamindary areas are not available. From 1877/78 onwards, however, information on 'Inam' lands has also been furnished. But the classification made of total area cultivated was not in terms of 'dry' and 'wet' lands but 'irrigated' and 'unirrigated'. Land that had been classified 'irrigated for three consecutive years was formed as 'wet'.

Table 1.1 furnishes data on 'Government' or 'Ryotwari' area under

Table 1.1: Ryotwari or Government Land Under Cultivation: Godavari District

Year	Wet Acres	Index Numbers 1859-61=100	Dry Acres	Index Numbers 1859-61=100	Garden Acres	Total Acres	Index Numbers 1859-61=100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1859-60	1,13,271	92.4	2,17,526	92.1	3,120	3,33,917	92.3
1860-61	1,23,042	100.3	2,48,538	105.1	2,734	3,74,314	103.5
1861-62	1,31,634	107.3	2,42,333	102.6	2,670	3,76,637	104.2
1862-63	1,39,934	114.1	2,39,371	101.4	3,074	3,82,379	105.7
1863-64	1,86,107	151.7	2,17,664	92.2	2,322	4,06,093	112.7
1864-65	1,38,346	112.8	2,54,395	107.7	2,637	3,95,378	109.3
1865-66	1,72,470	140.6	2,43,846	103.3	--	4,16,316	115.1
1866-67	2,08,082	169.7	2,31,381	98.0	--	4,39,807	121.6
1867-68	2,66,876	217.5	2,04,991	86.8	--	4,71,867	130.5
1868-69	2,09,664	170.9	2,50,212	105.9	--	4,59,876	127.2
1869-70	2,24,986	183.4	2,67,048	113.1	--	4,92,034	136.1
1870-71	2,38,468	194.4	2,68,327	113.7	--	5,06,795	140.1
1871-72	2,35,867	192.3	2,51,682	106.6	--	4,87,549	134.8
1872-73	2,64,717	215.8	3,07,566	130.3	--	5,72,283	158.2
1873-74	2,74,347	223.7	3,01,494	127.7	--	5,75,841	159.2
1874-75	2,83,973	231.6	2,36,629	100.2	--	5,20,602	144.0
1875-76	2,89,358	235.9	2,32,505	98.5	--	5,21,863	144.3
1876-77	2,73,230	223.1	2,38,922	101.2	--	5,12,152	141.6
1877-78	2,88,072	234.9	2,52,502	106.9	--	5,40,574	149.4
1878-79	3,21,213	261.9	2,88,201	122.1	--	6,09,414	168.5
1879-80	3,35,346	273.4	2,72,023	115.2	--	6,07,369	167.9
1880-81	2,93,491	239.2	2,90,819	123.2	--	5,84,310	161.5
1881-82	3,05,511	249.0	2,99,727	126.9	--	6,05,236	167.3
1882-83	2,88,727	235.4	3,07,659	130.3	--	5,96,386	164.8
1883-84	2,90,824	237.1	3,05,980	129.6	--	5,96,804	165.0

Sources: (i) Proceedings of Board of Revenue, 8th May 1878

(ii) Administration Reports of Madras Presidency - various issues

Notes: * From 1878/79 onwards the figures include particulars of Inam lands also. As area under second crop irrigated was negligible, it was not included in the above data.

Thus, during a period of a quarter century beginning with 1859-60, total ryotwari or Government assessed land under cultivation had increased by around 65 percent. Area under dry cultivation increased at a slower rate than area under wet or paddy cultivation*. However, despite a general trend of increase, fluctuations in wet area are noticeable. As a matter of fact, one does not find a significant increase in the wet area till 1864-65. It is only from 1865-66 onwards that we can discern a rising trend in wet area punctuated by occasional falls. By the early eighties Government land under 'wet' had more than doubled. In 1859 the area under wet cultivation was only 1,13,271 in the Ryotwari areas. By 1883-84 it rose to 2,90,824 acres (in Ryotwari and Inam lands put together). Dry area in the same period increased from 2,17,526 acres in 1859-60 to 3,05,986 acres in 1883-84. Thus dry cultivation registered a slower rate of growth than wet cultivation.

An analysis of the progress of total irrigated land in the district under all tenures becomes difficult in so far as a continuous series of data is missing. Information on the zemindary lands irrigated is woefully inadequate for it is available only for six years viz 1867-1872. Hence estimates of zamindary areas have to be made for the period based on the available data on the Government and Inam lands.

W.S. Foster, Collector of Godavari district provided some information on the extent of land irrigated by the Godavari channels under Government, Inam and Zamindary areas.5/ But the data refer to only the Delta area

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* Crops grown on irrigated lands other than paddy, like sugarcane, cotton, etc. formed only an insignificant - proportion of the total wet area in the Godavari district. Hence for all practical purposes 'wet' area may be taken as one growing paddy.

5/ Proceedings of Board of Revenue (hereafter referred to as PBR) 18th December 1873 & June 1874.

and information on lands irrigated by sources other than Godavari Channels is not available.*

Table 1.2 gives only a partial picture of the progress of irrigation in the Godavari district as information on uplands and lands irrigated by Krishna Channels and sources other than irrigation canals is missing. Table 1.3 gives particulars of area irrigated in the whole district of Godavari for the period 1878-1883. But here again the Administration Reports provided data only on Government and Inam lands, Hence the Zamindari area under irrigation had to be estimated. The ratio of Government and Inam lands irrigated (put together) to the Zamindari lands for the three years 1870-72 stood at 1.0 : 0.268. Assuming that this ratio holds good for the period 1878-1883 as well, the Zamindari areas under irrigation have been estimated. Thus table 1.3 furnishes data on Government and Inam lands irrigated as given in the Administration Reports and estimates of Zamindari areas irrigated between 1878 and 1883. Between 1878 and 1883 total irrigated land (on which mainly paddy was grown) appears to have stagnated and declined slightly.

For instance the Kistna Irrigation System also supplied water to portions of Ellore Taluka of the Godavari district.

Table 1.2: Land Irrigated by the Godavari Channels in the Government, Inam and Zamindari Areas of Godavari District (only Delta areas)

Year	Government		Inam		Zamindari		Total
	Extent	Percentage in total irrigated area	Extent	Percentage in total irrigated area	Extent	Percentage in total irrigated area	
	Acres		Acres		Acres		Acres
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1867	1,33,290	49.2	67,602	24.9	70,169	25.9	2,71,061
1868	1,34,415	49.3	67,931	24.9	70,424	25.8	2,72,970
1869	1,52,680	51.7	70,042	23.8	72,369	24.5	2,95,091
1870	1,61,281	50.2	67,334	20.9	92,903	28.9	3,21,518
1871	1,60,679	50.6	66,665	20.9	90,507	28.5	3,17,851
1872	1,69,890	52.3	64,721	20.0	90,462	27.7	3,25,073

Source: Proceedings of Board of Revenue, 18th December, 1873 and Proceedings of Board of Revenue, June 1874, Pp 3879-87.

Table 1.3: Area irrigated by all sources in the Godavari District (Deltas and Uplands put together)

Year	Government		Inam		Zamindary*		Total Land under Irrigation
	Extent	Percentage to total irrigated area	Extent	Percentage in total irrigated area	Extent	Percentage in total irrigated area	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Acres		Acres		Acres		Acres
1878	3,21,213	49.4	1,55,172	23.8	1,74,[illegible]	26.8	6,51,218
1879	3,35,346	47.9	1,76,940	25.3	1,88,009	26.8	7,00,295
1880	2,93,491	46.9	1,64,240	26.3	1,67,987	26.8	6,25,718
1881	3,05,511	48.1	1,59,523	25.1	1,70,667	26.8	6,35,701
1882	2,88,727	47.4	1,56,928	25.8	1,63,656	26.8	6,09,311
1883	2,90,824	45.1	1,80,889	28.1	1,73,119	26.8	6,44,832

Source: Reports on the Administration of Madras Presidency

* Estimates

1.4 REASONS FOR FLUCTUATIONS IN 'WET' AREA

As we have already noticed a steady increase in wet area (Government) commenced only from 1965-66 onwards. Again, between 1878 and 1883 for which data are available one finds a steady decline in the total area irrigated in the Godavari district.

An excessive water rate, rigid water rules, stagnation in the prices of paddy, bad drainage and late supply of water appear to be some of the major reasons for the slow progress of wet cultivation and occasional relinquishments of wet lands in the district.6/

Large scale reconversion of wet lands into dry that had taken place in the district should be mainly attributed to the prevalence of an excessive water rate of Rs.4/- per acre. But Foster, a one time Collector of Godavari district and Galton the Sub-Collector of Rajahmundry had a different view. They stated:

> "Four rupees an acre has been for long readily and cheerfully paid ..... and no question of its being excessive can be entertained".7/

However, this appears to be an erroneous view. In the late sixties the Government proposed to levy an Irrigation cess for the repair of tanks. It sought the opinion of the Irrigation and Revenue Officials in this regard. Mr. W.A. Happel, Acting Head & Asst. Collector, Godavari district felt that the proposed Irrigation cess was uncalled for as the existing assessment itself was sufficiently high. Happel stated:

6/ Lt. Campbell, quoted by W.S. Foster, Collector of Godavari in his letter to H. Stokes, Secretary to the Board of Revenue, dated 6th December, 1877 No.337 Pp 122-134.

7/ quoted in Kelsall's Report dated 12th March 1877 No.65

"I entirely disapprove of the proposed irrigation cess. I cannot see in what respect it differs from a simple increase of the assessment, already sufficiently high on wet lands. The assessment has already been fixed, and puttahs granted to the ryots in this district, on the understanding that it will not be revised for a long term of years. The obligation of government to keep irrigation works in repair in return for the higher assessment charged on wet than on dry lands has long been recognised and was no doubt present to the minds of the Settlement Officers who fixed the present rates. The question of the rates to be imposed was fully discussed at the time, and no one whose views are not limited by the consideration of the immediate increase or decrease of the revenue, can doubt that they are at present quite high enough".8/ (Italics added).

J.W. Rundall, Executive Engineer, Godavari was also not very enthusiastic about levying the Irrigation cess. He stated:

"Such a cess does not seem applicable to the Delta talooks, where irrigation works have already been constructed and where lands receiving the benefit of irrigation pay a direct water rate".9/

Even the over-zealous Revenue Officials who endorse the levy of a higher water rate do so with some qualifications. For instance J. Fraser, Collector of Godavery District stated:

8/ Memo by Mr. W.A. Happell, Acting Head Asst. Collector, Godavery District, on the subject of circular No.2 dated 5th April, 1869.

9/ Memorandum by J.W. Rundall, Ex. Engineer, Godavery on the subject of Circular No.2, dated 5th March 1869.

"The water rate in this district be equitably raised, I think to 6 Rupees an acre instead of the present rate of 4 Rupees, but with the proviso that all wet and irrigable lands be first provided with perfect drainage. This is very imperfect in several parts of the Delta, the western particularly".10/ (Italics added).

Thus the concensus among the Revenue Officials and Irrigation Engineers appears to be that a water rate of Rs.4/- per acre was high. But this is not the complete story. Rules of relinquishment of wet lands were rigid till the late sixties of the previous century. The Godavari ryot was not permitted to relinquish his wet land when he felt that the tax burden was oppressive.* However, Mr. Foster, Collector of Godavari District denied that there was any general complaint against the water rules.11/ But he did admit that there were certain "isolated instances of complaints against some of the rules". At a time when the agricultural productivity was only slowly rising, crops were uncertain and methods of cultivation static a water rate of Rs.4/- per acre could not have been "readily and cheerfully paid"*. If the ryots did not have any reason to complain against the burden of water rate they would not have relinquished their wet lands on so large a scale when water rules were liberalised in the late sixties allowing the ryot either to opt for or refuse water for his land.

10/ Replies of Mr. J. Fraser, Collector of Godavery District, to Circular No.2, dated 27th February, 1866.

* Tax burden is discussed more elaborately in the ensuing pages.

11/ W.S. Foster op.cit., FBR 1877 No.337 Pp 128-134.

Another reason for a temporary decline in the irrigated area in the district was the destruction of Palmyrah sluices before an alternative system was evolved.

Kelsall, an Irrigation Engineer of the District observed:

"I attribute the falling off (in the irrigated area) to the construction of side channels and to the wholesale destruction of palmyrah sluices before proper sluices were supplied in their place. I am more confirmed in this opinion by the fact that it is in the Eastern Delta and not in the Central Delta that there has been marked falling off. It is only in Ramachandrapuram that there has been any marked extension of irrigation from side channels instead of from the main canal. It is in this taluk alone that I have received complaints of, and have seen for myself repeated instances of the ruthless destruction of the old palmyrah and pot sluices, while inadequate provision has been made for replacing them". 12/

As for stagnation in the price of paddy discouraging the spread of wet cultivation, the following statement demonstrated this fact.

12/ Kelsall's Report dated 12th March 1977 No.65

Table 1.4: Price of Rice (Second Sort) per bag of 75 Kgs in the Godavari District

Year	Rice per bag (1 bag=75Kgs)	Remarks
(1)	(2)	(3)
1875-76	3.85	
76-77	6.44	The Famine period
77-78	10.33	
78-79	8.52	
79-80	5.15	Years for which data on total irrigated land in the district are furnished in table 1.3
80-81	4.54	
81-82	4.48	
82-83	4.75	
83-84	5.35	
84-85	N.A.	
85-86	5.67	
86-87	5.50	
87-88	5.29	
88-89	5.46	
89-90	5.50	
1890-91	5.67	

Note :- Computed from Administration Reports of the Madras Presidency.

Prices of Rice (Second Sort) were relatively stagnant between 1879 and 1883. This has relevance to table 1.3 . Excluding the year 1879, a year close to the destructive famine of 1876-78 which had affected certain regions of the Madras Presidency, one finds stagnation and even a slight decline in the total area irrigated during the period 1878-1883. Total land irrigated in the district was 6,51,218 acres in 1878. By 1883 it declined to 6,44,832 acres.

Bad drainage and late supply of water appear to be the other reasons for the slow progress of wet cultivation in the Godavari district. Some of the water-logged lands grew wet crops. But when they were drained, a portion of such lands was rendered fit only for dry cultivation.[13/] However, there does not appear to be a consensus of opinion in this matter. For instance Gelton observed:

> "No doubt some lands which now, from being water-logged, grow only wet crops, will when drained, be suitable for dry cultivation and a small proportion of it may be turned into dry. But drainage will lead rather to an increase than decrease of wet cultivation, as reclaimed swamps make the best paddy lands".[14/]

Even on late supply of water slowing down the progress of wet cultivation Campbell's views were not subscribed to by the Board of Revenue. Campbell felt that the failure of the government to supply water in time to the cultivators had discouraged the spread of wet

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13/ Campbell quoted by W.S. Foster, op.cit., 6th December 1877 No.337 Pp 128-134.

14/ quoted in Kelsall's Report op.cit.,

cultivation. The Board of Revenue disagreed. However, the Board could cite only one year viz 1875 in which an ultimately provision of water and an absence of a fall in the irrigated land went hand in hand. As Campbell's version had not been effectively and conslusively refuted by the Board one is led to believe that perhaps Campbell's argument was nearer to truth.

As stated earlier the second crop formed an insignificant proportion of the total irrigated land in the Godavari district. 'Dalwa' or the second crop of rice was raised on an insignificant portion of land which from natural condition of imperfect drainage was under water during the early part of the agricultural year and could be cultivated when the land was drained. As the Collector of Godavari observed:

> "It (second crop) is an indifferent and make-shift crop and disappears when better drainage enabled the ryots to raise one during the proper cultivation season .... the ryots of the district do not raise two crops of rice on the same land as a rule, for they dread the disadvantage of over cropping and exhausting their land". 15/

The extent of land that usually yielded two crops of paddy in 1870 was not more than five thousand acres. It did not rise to any significant extent for another two decades, as the Reports on the Administration of the Madras Presidency would testify.

15/ Letter from the Collector of Godavari to the Jr. Secretary to the Board of Revenue, dated 31st March, 1871 JBR 1871 No.111 Pp 682-684.

Section II

CROPPING PATTERN AND FOOD SURPLUSES

Particulars of cropping pattern are available only for the government and Inam lands for a short period of thirteen years ending 1890-91. Information on the zamindary areas is missing. As such this partial picture has to be used to draw some inferences. Table 2.1 furnishes data on total area under cultivation, areas under food grains and non food grains for the government and Inam areas of the Godavari district.

As Table 2.1 shows total area under cultivation showed some fluctuations all through the period, although a rise is discernible from the late eighties. However area under food-grains showed marked decline between 1880 and 1887. While area under pulses, although forming a small proportion in the total food grain area, showed a consistent increase, it was the area under cereals which marked a fall from 1880 to 1886. In other words, the absolute fall in the total area under foodgrains should be mainly attributed to a fall in the area under cereals.

As table 2.2 shows Rice-area does occupy an increasingly import place in the total area under cereals. But a striking feature that one notices is a fall in the extent of rice-area in the eighties. Is it a pointer to a shift in the over all cropping pattern?

Tables 2.3 and 2.4 help us to locate the specific reason for stagnation and even fall in the area under cereals. The reason is obvious. Area under rice which formed a little over 50% of the total cultivated area in the late seventies showed a marked fall all through the

following period. This fall is quite significant in the early eighties. The performance of the other coarse cereals is no better during this period. Why did this happen? Why did not the Rice-specialisation proceed more pronouncedly and gain a momentum? How and why paddy could not become a commercial crop? Had the district already tapped the maximum potential of rice-specialisation? Did the Godavari-cultivator face any in-built disincentives in the system? Or was the cultivator slowly turning towards cash crops? We will take up the last question first and postpone an attempt at answering the other questions to a later stage. Total area under non-food/cash crops registered a significant increase in a short span of thirteen years from 1,66,027 in 1878/79 to a little over 2,60,263 acres by 1890-91. An interesting feature of table 2.5 is that among the non-food crops or cash crops in the district it was not sugar cane or cotton or Indigo-the traditional cash crops prominent elsewhere in Andhra-which occupied a pride of place. It was the oilseeds and especially gingelly which had a high share of area in the total non-food crop area. By and large oil seeds as a whole formed more than 55% of the total area under non-food crops in the district. Except for the years 1887-88 when area under oilseeds in general and gingelly in particular showed a marked decline, in all other years area under gingelly either remained at a high level or registered an increase. This raises a question as to why cotton and sugar cane could not catch up. True, historically cotton never occupied a large area in the Godavari district like in the neighbouring district of Kristna. It may be argued that the soils of the Kristna district were more suitable for the cultivation of cotton than in Godavari. But sugar cane could have been grown on the Godavari soil with the assured irrigation under the Godavari anicut system. However, Col. Cotton's fond hope of raising sugar plantations in the Godavari district remained unfulfilled in

Table 2.1: Total area under cultivation, areas under foodgrains and cash crops in the Godavari district (Ryotwari and Inam areas)

Year	Total area under cultivation	Area under foodgrains	Area under cereals	Area under pulses	Area under cashcrops
(1)	(2)	(3)	(4)	(5)	(6)
	Acres	Acres	Acres	Acres	Acres
1978-79	9,70,777	8,17,920	7,64,941	57,979	1,52,857
79-80	9,99,388	8,29,856	7,60,068	69,788	1,69,532
80-81	9,74,568	7,81,200	7,04,724	76,476	1,93,368
81-82	9,76,051	7,64,585	6,97,681	66,904	2,11,466
82-83	9,62,540	7,59,685	6,92,880	66,305	2,02,855
83-84	9,87,682	7,68,407	7,03,235	65,172	2,19,275
84-85	10,25,496	7,80,703	7,12,449	68,254	2,44,793
85-86	9,89,534	7,79,543	7,06,316	87,087	2,09,991
86-87	10,27,480	8,04,051	7,36,110	67,941	2,23,429
87-88	10,22,591	7,33,250	7,54,875	78,375	2,89,341
88-89	10,54,447	8,23,153	7,39,186	83,967	2,31,294
89-90	11,33,734	8,77,668	7,69,658	1,08,010	2,56,066
1890-91	11,14,028	8,70,873	7,87,395	83,478	2,43,155

Source: Administration Reports of the Madras Presidency Various Issues.

Table 2.2: Statement showing the percentage of Rice-area in the total area under cereals in the Godavari district

Year	Total area under cereals	Area under Rice		Area under other cereals	
	Extent	Extent	Percentage in total area under cereals	Extent	Percentage in total area under cereals
(1)	(2)	(3)	(4)	(5)	(6)
	Acres	Acres	%	Acres	%
1878-79	7,64,941	5,74,481	75.1	1,90,460	24.9
79-80	7,60,068	5,93,587	78.0	1,66,481	22.0
80-81	7,04,724	5,43,619	77.0	1,61,105	23.0
81-82	6,97,681	5,47,340	78.4	1,50,341	21.6
82-83	6,92,880	5,38,699	77.7	1,54,181	22.3
83-84	7,03,235	5,30,811	75.5	1,72,424	24.5
84-85	7,12,449	5,70,053	80.0	1,42,396	20.0
85-86	7,06,316	5,44,750	77.1	1,61,560	22.9
86-87	7,36,110	5,98,021	81.2	1,38,089	18.8
87-88	7,54,875	5,89,021	78.0	1,65,854	22.0
88-89	7,39,186	5,77,972	73.1	1,61,214	21.9
89-90	7,69,658	6,25,562	81.2	1,44,096	18.8
1890-91	7,87,395	6,35,226	80.6	1,52,169	19.4

Source: Administration Reports of the Madras Presidency Various Issues

Table 2.3: Cropping pattern in the Godavari District (Government and Inam lands only)

Year	Total area under cultivation	Area under cereals						Area under pulses and cash crops
		Rice	Cholum	Cumbu	Korra	Ragi	Variga	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
1878-79	9,70,777	5,74,481	1,00,963	13,608	14,095	21,398	22,026	2,24,006
79-80	9,99,388	5,93,587	87,180	11,312	11,172	20,882	21,902	2,53,533
80-81	9,74,568	5,45,619	89,163	10,430	9,002	20,470	19,311	2,82,573
81-82	9,76,051	5,47,340	80,274	9,924	8,824	18,950	19,526	2,91,213
82-83	9,62,540	5,38,699	92,071	5,948	5,432	21,221	18,549	2,79,620
83-84	9,87,682	5,30,811	91,580	10,618	7,544	26,551	22,927	2,97,651
84-85	10,25,496	5,73,053	76,117	9,634	6,860	21,788	14,545	3,23,499
85-86	9,89,534	5,40,750	90,425	9,674	8,188	20,222	19,197	2,97,078
86-87	10,27,480	5,98,021	77,459	9,789	6,222	17,446	16,891	3,01,652
87-88	10,22,591	5,89,236	91,138	9,789	2,505	25,633	3,500	3,00,790
88-89	10,54,447	5,77,972	85,831	10,666	2,808	26,385	6,302	3,44,483
89-90	11,33,734	6,25,562	69,276	12,627	2,873	24,949	2,962	3,95,485
1890-91	11,14,028	6,35,226	90,082	10,506	3,322	25,110	6,041	3,43,741

Source: Administration Reports of the Madras Presidency: Various Issues

Table 2.4: Percentage of cereal areas in the total cultivated area in the Godavari district (Government and Inam areas only)

Year	Rice	Cholum	Cumbu	Korra	Ragi	Varigu	Pulses and cash crops
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	%	%	%	%	%	%	%
1878-79	59.19	10.41	1.42	1.35	2.29	2.25	23.07
79-80	59.40	8.73	1.13	1.11	2.0	2.19	25.36
80-81	55.78	9.15	1.07	0.92	2.1	1.98	29.00
81-82	56.08	8.25	1.02	0.90	1.9	2.00	29.83
82-83	55.97	9.57	0.62	0.67	2.20	1.93	29.04
83-84	53.75	9.27	1.07	0.76	2.69	2.32	30.14
84-85	55.83	7.42	0.94	0.67	2.12	1.42	31.55
85-86	55.04	9.15	0.98	0.83	2.04	1.93	30.02
86-87	58.20	5.53	0.96	0.62	1.70	1.64	29.35
87-88	57.61	8.92	0.96	0.24	2.52	0.34	29.41
88-89	54.81	8.14	1.01	0.27	2.50	0.60	32.67
89-90	55.19	6.11	1.11	0.25	2.20	0.26	34.88
1890-91	57.03	8.08	0.95	0.30	0.25	0.54	30.85

Note: Based on table 1.6

Table 2.5: Area under Non-food/cash crops in the Godavari District (Ryotwari & Inam cereals)

Year	Total area under Non-food crops	Area under							
		Sugar	Cotton	Oil seeds		Total oil seeds including some minor crops	Dyes and Indigo	Orchard and garden produce	Others
				Gingelly	Lamp and castor				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
1978-79	1,66,027	5,599	4,645	75,145	17,679	92,893	673	26,157	36,036
79-80	1,83,745	5,032	9,075	81,085	21,229	1,02,447	732	26,796	39,663
80-81	2,16,097	6,415	12,483	89,193	24,460	1,13,823	1,296	27,857	54,221
81-82	2,24,309	5,762	12,806	1,04,332	27,805	1,33,697	1,677	28,021	42,346
82-83	2,12,815	N.A	19,470	N.A	N.A	N.A	3,008	N.A	-
83-84	2,32,479	10,503	10,635	1,02,982	32,747	1,36,191	2,385	32,213	40,552
84-85	2,55,245	9,200	7,486	96,811	33,471	1,30,619	1,807	31,350	74,793
85-86	2,10,091	5,658	8,255	1,23,962	31,419	1,55,648	1,164	33,686	5,680
86-87	2,33,711	7,516	3,377	99,736	27,075	1,26,873	1,230	36,468	58,247
87-88	2,22,415	7,363	5,313	75,235	25,983	1,01,288	959	36,895	70,597
88-89	2,60,516	8,277	7,235	98,641	36,872	1,36,276	1,409	39,525	67,794
89-90	2,87,475	8,888	2,768	1,30,145	26,592	1,66,564	555	40,051	68,649
1890-91	2,60,263	9,741	6,800	1,14,444	35,077	1,49,653	496	40,041	53,532

Source: Administration Reports of the Madras Presidency: Various Issues

the 19th century. As table 2.5 shows sugar cane occupied a very significant proportion of land under cultivation. A high cost of cultivation appeared to have stood as a deterrent in this regard. The Godavari ryot had to incur an exhorbitant cost of Rs.200/- towards expenses for raising an acre of sugar cane.

Mr. C. Benson, Asst. Superintendent, Government Farms who toured the Delta regions of Coastal Andhra gave the following information on the cost of sugar cane cultivation (See Table 2.6).

Table 2.6: Cost of Cultivation of Sugar Cane per acre

Sl.No. (1)	Item (2)	Cost of Cultivation (3)
1.	Ploughing up and preparing the land	9.00
2.	Manuring	15.00
3.	Seeds and Planting	20.00
4.	Hoeing	10.00
5.	Trenching	6.00
6.	Tying up the bamboos	40.00
7.	Fencing closely	18.00
8.	Watching	12.00
		130.00
.	Land and Water rate	10.00
	Total cost of growing cane	140.00
	Manufacture of Jaggery	60.00
	Total Cost	200.00

Source: Benson's Report to the Director of Revenue Settlement and Agriculture dated 2nd November, 1883, Proceedings of Board of Revenue 2nd November, 1883 Pp 1-15.

A semi-subsistence farmer of the Delta should have found it highly difficult to invest such a large sum in sugar cane cultivation.

Thus, overall we find the Godavari district going in for rice-Specialisation. And as stated earlier the pace of this specialisation in terms of acreage not slowed down for the reasons cited above. Rice was the staple food of the rural elite of the district in the pre-anicut period. But as irrigation facilities were extended and more and more land came under paddy, there was a scope for a change in the consumption habits of even the non-elite sections of the rural areas. Increase in the local demand for rice must have given an added stimulus for the extension of paddy cultivation in the early phase. But there is a limit to such a stimulus as the local demand for rice was linked up with the type of wage payment (cash or kind) and the movement of real wages of the rural labour. Space problem discourages the present author to go into the details of the fortunes of various groups of the agricultural community of the district. While tenantry - especially the zamindari tenantry were rack rented the conditions of the casual agricultural labourers had worsened during the entire period under consideration (See Appendix 2). Cash payment of wages to casual or unattached labour increasingly came to replace the kind payments. With an upward movement in the prices of agricultural produce (a movement viewed only at the district level and not compared with other districts) (See Appendix 4) and a large scale immigration of agricultural labourers from the northern districts of Visakhapatnam and Ganjam, in the post 1876-78 famine period the bargaining position of the labourers had weakened. As a result not only their real wages but even the money wages had fallen. Hence their demand for food-grains could not extend upto rice but only confined itself to Cholum, Cumbu, Ragi and other coarse varieties from the eighties onwards. These

cheaper foodgrains were either grown locally in the uplands, or were imported from other districts. To repeat the argument, the dwindling purchasing power of the non-elite sections of the rural areas must have slowed down the change in the food habit and hence demand for rice. In other words, those rice-growers who had acquired marketable surpluses had to tap the grain markets either in the neighbouring or distant markets from the late seventies onwards. Herein comes the necessity for an efficient and adequate transport system. But we are anticipating what has to follow. Let us begin with the beginning. The questions are: were the "food surpluses" created during this period? If so, had the rice-growers become market oriented? Did the traditional transport facilities rise up to the occasion? If not, was there a demand for railroad facilities? If such a demand was not met till the early nineties what could have been the reasons weighing in the decision making process of the colonial regime? An attempt is made in the ensuing sections to answer these questions.

Emergence of "food surpluses"

The non-availability of a reliable series of data on the cropping pattern in the zamindari areas of the district hampens one's enthusiasm to estimate "food surpluses". Hence one has to fall back upon any piece of information that one can cull out from the official proceedings. Only care may be taken to evaluate such evidence.

The Department of Revenue made some estimates of gross output, consumption needs and probable food surpluses for the year 1875-76. The District Collector was asked to furnish information on the average quantity of food consumed by males, females and children below 12 years. The Collector of Godavari district supplied the following information.

Table 2.7: Statement showing the quantity of food consumed by each individuals per day in the Godavari district.

District	Male adult (lbs)	Boy (lbs)	Female adult (lbs)	Girl (lbs)
Godavari	2	1	2	1

Dr. Cornish, a Sanitary Commissioner furnished the following estimates of food requirements. He observed:

> "Assuming ..... that 24 ounces of cereal grain represent the average consumption of an adult, the following quantities will be required for the daily sustenance of a population of 100 persons" 16/

	lbs of grain
66 adults (above 10 years)	99.00
17 Children (from 5 to 10 years)	12.75
17 infants (from 0 to 5 years)	6.37
Total	118.12

Allowing a margin on this calculation, Dr. Cornish reckoned that each 100 of the population required from 120 to 125 lbs of grains per day. Dr. Cornish qualified his statement thus:

> "It is by no means intended that the people restrict themselves to the consumption ... above calculated but jail experience shows that 24 ounces of millet, dhal and vegetables, salt and condiments is sufficient to prevent

16/ PBR 19th December 1878 Op.cit.,

excessive bodily waste under the moderate exertion involved in jail labour" [17]

For the purpose of calculation of the total consumption of grain in each district, the Board of Revenue adopted Dr. Cornish's estimates, supported as it was by the majority of the District Collectors of the Madras Presidency. Thus, calculated at the rate of 1¾ lbs per individual, the annual foodgrain requirements in the Godavari district turned out to be 3,24,000 tons. As for the seeds the Board felt that 41 lbs of paddy per an irrigated land and 6 lbs to 20 lbs of dry grains per acre were required. The Board considered that an average quantity of 20 lbs per acre for all grains might be taken leaving an ample margin for wastage etc. Reckoning at this rate the Godavari district required an annual quantum of 13,000 tons of seeds. Adding these quantities for the estimates of food grains required for consumption and deducting their sums from the estimated gross outputs of the district the Board arrived at the estimates of the food surpluses as shown below:

Table 2.8: "Food Surpluses" in the Godavari district, 1875-76

Sl. No.	Item	Quantities (X) tons
1.	Estimated gross output of foodgrains	6,01,000
2.	Quantity of foodgrains required for consumption and seeds	3,37,000
3.	Estimated food surpluses	2,64,000
4.	Food surpluses as percentage of gross output	43.9%

17/ PBR 19th December 1878 Op.cit.,

Thus, according to the Board of Revenue nearly 44 percent of the gross output of food grains in the district turned out to be "surplus". However, these estimates cannot be taken at their face value. Firstly, the zamindari areas comprise not an insignificant proportion of the total area of the Godavari district (See Appendix 5). Particulars of total cropped area and area under food grains for the zamindari areas are conspicuous by their absence. As the revenue officials of the Government did not have adequate power to assert themselves over the 'karnams' (village accountants), the latter were not duty bound to furnish accurate statistics to the government. So this inexactness was built into these estimates. Secondly, productivity per acre is an important variable in building up these estimates. The Board of Revenue had arrived at an average figure of 5.59 bags (1 bag = 75 Ks) or 0.412775 tons per acre. They obtained this figure on the basis of the experiments conducted by the Government from time to time. These experiments so called appear to have been conducted in good years and possibly on good soils. For instance the per acre productivities of 11.75 bags of paddy and 6.60 bags of dry grains which these experiments yielded appear to be on higher side and strengthen one's doubts. Thirdly, even on the consumption side there was some score for the Board to inflate the figure for food surpluses as they had taken a population figure less than that of 1871 census. Adjusting the decennial growth rate viz 3.02 percent between 1871-1881 we find that the Board had under estimated the population well over 20,600 as shown in the following table.

Table 2.6: Population of Godavari, 1875/76

District (1)	Population in 1871 as per census (2)	Population figures the Board adopted (3)	Alternative estimates of population (4)	Difference (4) - (2)
Godavari	15,72,939	15,91,582	16,12,183	20,601

Thus the Board had slightly over estimates the food surpluses in so far as they underestimated the 1875/76 population. Hence the quantitative dimensions that the Board of Revenue gave for the food surpluses have to be taken with some reservations. However, the fact cannot be denied that by mid-seventies of the 19th century the Godavari district did generate some food surpluses. One might quarrel with the Board over the accuracy of the figures but one cannot possibly dispute the fact that the food deficient Godavari district of the pre-anicut times, by sheer physical expansion of the area if not with a dramatic increase in the productivity had come to stay as a food-surplus district in a matter of two decades. That the expansion could have been faster and the "surplus" larger in a more conducive atmosphere do not mitigate the significance of the phenomenon of 'surplus' itself.

SECTION III

CONSTRAINTS ON AGRICULTURAL GROWTH

3 (a) TAX BURDEN

Let us analyse the reasons for the slower pace of agricultural expansion in terms of the built-in-disincentives that we hypothesised in an earlier section. As a starting point tax burden on the cultivators may be taken up as a continuous disincentive to growth.

On the eve of the Survey and Settlements in the district, experiments were conducted in the early sixties. Reporting on one such experiment the Collector of Godavari observed:

> "The value of the produce in the experiment made on wet and dry crops in the villages of Paina and Alamur was determined by estimates upon the spot ... The crop on the ground was not purchased for government. It was reaped and threshed at the cost of cultivator under the superintendence of Government officers, by whom the grain has afterwards been measured and valued at the same rate as similar grain fetched in the village. The expenses for reaping and threshing, were paid under government superintendence, the other expenses were ascertained from the cultivator. The Jonna (Cholum) crop in this district suffered severely during the last Fasli 1272 (1862) from the failure of rain and this will account for the loss sustained in the dry crops." 18/

Table 3.1 gives details of cost of dry and wet crops in the villages of Alamur and Paina of the Godavari district on 11 acres of land in 1862.

18/ PBR, 21st July, 1863, No.205, pp.1540-44.

Table 3.1: Cultivation expenses in the Godavari district for a "putty" of land (11 acres), 1862

Sl. No.	Details of cost	Alamur village Dry land	Paina village Wet land
		Rs.	Rs.
1.	Preparing the field	6.75	16.75
2.	Value of seed	1.87	6.25
3.	Watching	3.12	-
4.	Threshing	2.39	6.39
5.	Reaping and stacking the produce etc.	4.62	13.62
6.	Manuring	-	1.62
7.	Taking up the plant and transplanting the same	-	13.75
8.	Weeding	-	4.62
Total cost per 11 acres		18.75	63.00
Cost per acre		1.70	5.73

Source: PBR, 21st July, 1863, No.205, pp.1540-44.

According to another estimate productivity per acre in the Godavari district turned out as following:

Table 3.2: Type of land and productivity per acre in the Godavari district (1 bag = 75 kgs.)

Type of land	Productivity per acre in bags
Best land	15.78
Medium land	11.51
Inferior land	7.87
Average	11.72

The Board of Revenue tried to arrive at an estimate of the ordinary average yield per acre of the different kinds of crops. Table 3.3 furnishes such information for the district.

Table 3.3: Agricultural Productivity

District	Paddy per acre		Other grains per acre		
	One crop irrigated	Unirrigated	Cholum	Ragi	Cumbu
	bags	bags	bags	bags	bags
Godavari	11.75	9.24	8.60	10.57	6.70

As stated earlier, these productivity figures have to be used with caution. The possibility of Revenue officials inflating these statistics cannot be ruled out. Even if these data are taken at their face value, one finds the tax burden on the lands - especially on wet lands - rather high as the following analysis reveals.

Table 3.4: Tax burden and per acre particulars of wet cultivation in the Godavari district (Ryotwari lands)

Value of Gross Produce.	Land assessment	Water tax	Total agrl. tax	Cost of cultivation	Total expenses borne by the cultivators	Net Profit to cultivators	Total tax as a proportion of gross profit (4÷1)	Total tax as a proportion of net profit (4÷7)
1	2	3	4	5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
16.50	2.54	3.00	5.54	5.73	11.27	5.23	.34	1.06

Table 3.4 illustrates the nature of tax burden in the Ryotwari lands. The position of the zamindari cultivators was still worse. Agricultural tax per acre was Rs.10 and above in the zamindari areas.

The poverty striken zamindari ryot, never looked beyond the present hour. He was willing to take up land at any rent in the hope of making a living as well as his rent out of his produce. The zamindars had skillfully exploited this weak bargaining power of the cultivators.

As the Indian Famine Commission put it in a wider context:

> "At present the zamindari tenants have hardly any security of tenure. The rents are high, they are forbidden from making improvements on their land without the permission of the zamindars, money is wrung out of them to the last penny and they are annoyed in every possible way and their existence has become tolerable only by their ability to cheat the zamindars in their turn by concealment of cultivation and bribing the subordinates entrusted with the administration." 19/

Tenants at will who formed a large and increasing class of the agricultural community were kept in a state of abject surrender by the zamindars:

> "They (the tenants) were kept in a situation of absolute dependence on the landlord (zamindar), which takes away the desire to improve the land or to raise their own position or to lay by anything from the profits of agriculture." 20/

That the total tax burden was heavy on the people was admitted even by the Revenue officials. What the Collector of Krishna district stated for that district was equally applicable to Godavari:

19/ Report of the Famine Commission, 1881, Part II, Chapter III.

20/ PBR, 1882, May pp.3-9.

"There has been so much new taxation of late, and the increasing burden falls so heavily on the people that there is a grievous feeling of discontent and dissatisfaction. The present rate of income tax (land tax) is felt as a crushing burden on the poorer classes. The District Road Cess is not yet appreciated because the benefits it confers are not prospective, and much money will have to be laid before more than a few lines in each district can be undertaken. The price of salt has been considerably raised and so has the tax on fire wood. Municipal taxation meets with much opposition and the prospect of local fund taxes looming in the future is a very dark cloud in the horizon." 21/

The burden of agricultural tax should be viewed in this broader perspective. That the total burden of taxes on the people was heavy is an undisputed fact, even conceded by S.Srinivasa Raghava Iyengar, the official biographer who took pains to establish the thesis that there was significant economic progress in the Madras Presidency during the period 1850-1890. In a wider context Mr. Iyengar had to admit:

"The incidence of taxes levied in 1852-53 was Rs.1-15-3, in 1872-73 Rs.2-11-0 and in 1889-90 Rs.2-4-3 per head or in other words, the rate of incidence had increased since 1852 by 51 percent while the purchasing power of money had fallen by 60 percent." 22/

Such a system of taxation could not but act as a severe deterrent for the agricultural expansion.

3 (b) TRANSPORT BOTTLENECK

It is shown in the earlier sections that the agricultural progress was not steady and the spread of wet cultivation was slowed down by excessive burden of taxation. In addition to this the other major factor which contributed to the slow growth of agriculture was the inadequate transport system.

21/ J.A.C. Boswell's Letter to the Acting Secretary to the Board of Revenue dated 7th October 1870, PBR. 1870. No.4421, pp.475-80.

22/ S. Srinivasa Raghava Iyengar, Memorandum on the Progress of Madras Presidency during the last 40 years, 1983, Madras, p.117.

The importance of transport system vis-a-vis agricultural progress, more particularly in an economy in transition cannot be overemphasised. Some data on imports and exports are provided in Appendix. As a series of data on trade over a long period is not available the growth or otherwise of the trade is sought to be measured indirectly by a recourse to an analysis of the nature and progress of road mileage, number of bundies or bullock carts available for transport, length of navigable canals and number of boats used to carry goods.

Table 3.5 gives particulars of 'Made Imperial Roads' in the Godavari district.

Table 3.5: Made Imperial Roads

Years	Length (miles)
1877-78	755
78-79	755
79-80	746
80-81	770
81-82	692
82-83	736
83-84	820

Source: Annual Reports on the Administration of Madras Presidency, Various Issues.

Except for the year 1883-84 the length of made imperial roads remained almost constant in the Godavari district.

Road transport was mainly carried out by bundies or bullock carts. If the trade had prospered and transport was efficient one can expect a significant increase in the number of carts that plied on these roads. Table 3.6 gives information on the number of carts in the Godavari district from 1877 onwards:

Table 3.6: No. of Carts in the Godavari district

Year	Number of carts
1877-78	17,207
78-79	6,499
79-80	6,684
80-81	7,946
81-82	7,815
82-83	8,133
83-84	8,703
84-85	8,311
85-86	9,313
86-87	9,210
87-88	10,534
88-89	11,084
89-90	12,985
1890-91	13,644

Source: Annual Reports on the Administration of Madras Presidency, Various Issues.

As table 3.6 shows till as late as 1884-85 the number of carts that plied in the district had actually declined when compared to the position obtained in the year 1877-78. The sudden and steep fall in 1878-79 might partly be attributed to the devastating famine of 1876-78. But from 1879-80 to 1886-87 the number of carts had either fallen in some years or remained stagnant in others. As we noticed in earlier sections this was precisely the period in which total cropped area in general and paddy-area in particular remained either stagnant or had fallen in some years for the reasons discussed earlier.

3 (b) (1) Canal Transport

The canals of Godavari deltas were primarily meant for irrigation. As such the needs of navigation were given only secondary importance.

The requirements of irrigation often clashed with that of navigation.[23] Firstly, for irrigation large quantities of water and consequently of silt have to be taken into a canal, and therefore the slope of the surface must be considerable, whereas for navigation the surface of the canal should have no slope. Secondly for irrigation there are timeswhen the canal should be kept low so that large quantities of surplus water may have to be passed into the drainage. But this may be inconvenient to the needs of navigation. Testifying to this clash between irrigation and navigation, Mr. Walch, the Superintending Engineer I Circle observed:

> "The canals of Godavari delta are primarily for irrigation, they have been made also for navigation to supplement their usefulness and never has there been a more successful combination. Its very success, however, now threatens,especially on the through lines to cause the secondary objective of the canals to over-top and seriously interfere with the primary one."[24]

In the Godavari district there were three main canals which were navigable. They were located in the three deltas, the Central, the Eastern and the Western. The Eastern delta had a bottom width of 184½ ft. The Central delta was 114 ft. wide and the bottom with a depth of 7 ft. of water. The Western delta varied considerably in width but when the water was carried on a single channel the bottom width was 225 ft. and the full depth of the water 10 ft.

Table 3.7 shows the length of the navigable canals in the Godavari district.

23/ C.T. Walch, Memorandum on Canals for the Combined purpose of irrigation and navigation, PBR, 27th June, 1886, pp.1-6.

24/ Walch, op.cit.,pp.1-6.

Table 3.7: Length of Navigable Canals, 1875-76

Item	Completed (miles)
Eastern	132
Central	104
Western	186
Total	422

We lack a continuous series of data on the length of navigable rivers and canals:

Table 3.8: Navigable in mileage

Years	Godavari River (miles)	Canals in Godavari District (miles)
1877-78	814*	-
78-79	814*	-
79-80	237	489
80-81	342	511
81-82	352	511
82-83	352	511
83-84	352	527

*Rivers and canals not distinguished.

Source: Administration Reports of the Madras Presidency

There was only a marginal increase in the length of navigable canals in the Godavari district.

Another piece of evidence to show that transport system of the district had not developed in any perceptible measure during the period under study is the number of cargo boats.

Table 3.9: Number of boats in the Godavari district

Years	Number of boats
1978-79	1,663
79-80	1,108
80-81	1,254
81-82	1,131
82-83	1,184
83-84	1,098
84-85	1,222
85-86	1,290
86-87	1,106
87-88	1,036
88-89	1,078
89-90	1,003

Source: Administration Reports of the Madras Presidency.

The fall in the number of boats in the district in a matter of a dozen years is quite significant. The stagnation and fall in the rice area in the late seventies and early eighties must have to some extent affected the quantums of marketable surplus of agricultural produce - mainly paddy. In the absence of an alternative type of transport, this fall will indicate a slump in production or a slump in trade or both. We have argued earlier that even by mid-seventies the Godavari district showed signs of significant marketable surpluses - mainly paddy. With a fall in the Rice-area this quantum of marketable surplus must have to some extent gone down. This fall in rice-area for a few years in the eighties alone cannot account for the fall in the number of boats - the most popular transport device. Perhaps, slump in grain trade consequent on fall in the local demand must have acted as a causative factor. We will revert to this argument a little later.

Z.A. Happel, Collector of the Godavari district fully agreed with the Chamber's view and endorsed their plea for the construction of railway line between Bezwada and Coconada. Happel observed:

> "I agree with the Chamber that the proper terminus for the lines of railway mentioned is Cocanada. Nearly all the export trade which passes through Bezwada, whether from Guntur or from Hyderabad territory, comes to Cocanada for shipment. When I was Collector of Krishna, Local Fund contractors refused to undertake to convey heavy material along the canals after the middle of January because heavily laden boats were liable to be brought to a standstill by accumulation of silt in certain parts of the canal. There is not sufficient water in the Krishna to keep the canals open for effective navigation after the beginning of March even if the difficulties in regard to silt could be overcome at a reasonable expense." 26/

Thus in the eighties, transport by canals had to undergo several hardships such as the clash of interests between irrigation and navigation and closure of canals for clearing silt from the canals etc.

Inadequate transport resulting in depressed prices at producing centres and wide margins between prices at producing and consuming centres.

We have analysed in earlier pages the phenomenon of the Godavari district becoming a grain surplus area in the post-anicut period. We have also hinted that the local demand for rice could not keep on increasing in the long run given the fact that purchasing power of the toiling masses was not increasing in the period. As there was a limit to the local demand for rice, the paddy growers with surpluses had to tap the markets outside the district. Apart from the Nizam's Native State which did have trade links with Delta regions the other important regions which depended on imports of Rice from the Krishna and Godavari Deltas were the

26/ W.A. Happel, Collector of Godavari District, PBR, 22nd February, 1888, No.93.

3 (b) (2) Closure of canals

By mid-eighties problems of navigation created obstacles in the smooth flow of goods for trade. Closures of canals for some time in the year became a big headache for the traders. The Government furnished a statment of intended dates of closure of canals to the Chamber of Commerce, Cocanada in 1887, and asked for any remarks the Chamber might have to make. Protesting against the closure of canals, J.M. Bryce, Chairman, Cocanada Chamber of Commerce observed:

> "The closure referred to mean that at least from 1st April till the end of May communication between Ellore and Cocanada as far as transit of produce is concerned, is virtually closed, while owing to the canal between Bezwada and Ellore till middle of June, Cocanada is for at least four months of the year without means of getting delivery of certain kind of produce, take, for instance, an article of such large production as paddy, there is little doubt be very considerably increased were it not for the want of proper means of communication with the interior." (italics added). 25/

The merchants had to face this annual stoppage of navigational facilities at a time when large quantities of produce (mainly foodgrains) ought to be coming forward as unavoidable. These prolonged interruptions had a highly hurtful effect on the trade of the Cocanada port. The Chamber requested the Government to consider the advisability and practicability of connecting Cocanada by railway with Bezwada, where the Bellary-Krishna State Railway and the British section of the Nizam's Guaranteed State Railway Company converge.

In the year 1885, the Western Delta head sluice was allowed to silt up, and the canals had to be closed to clear it out. A branch in the Ellore canal had also stopped traffic for three weeks. Naturally these closures of canals had interfered with the shipment of commodities.

25/ J.M. Bryce, PBR, 27th June, 1888, pp.1-6.

Cuddapah and Kurnool districts of the Presidency. We do not have price-data of the Nizam's Nztive State. But perhaps a comparison of movement of Rice price across time for the Godavari district with those of the importing centres might throw some light indirectly on the nature of transport system.

Table 3.10 shows Index Numbers of price of Rice, second sort for the four districts of Godavari, Krishna (exporting centres) and Cudappah and Kurnool (importing centres). For purposes of comparison, the average price of Rice for the years 1888-89 - 1890-91 in Godavari is taken as a standard of reference. The index numbers of the other three districts are computed taking the Godavari average as the base.

(Table 3.10)

Except for three years in the late eighties of the 19th century we find wide price-differentials between the production centres(Krishna and Godavari districts) and the consumption (importing) centres (Kurnool and Cuddapah districts). These disparities in the prices over a series of years show that inefficient and costly transport system that prevailed in this region should have been a major contributory factor for the slower growth of agriculture in the Godavari district.

However, this is not to suggest that price movements were unfavourable to the Godavari cultivators. It is a matter of fact that Rice prices did show an upward movement in the Godavari district in the eighties. The 1876-78 famine pushed a sizeable group of immigrants from Vishakapatnam, Krishna, Ganjam and other districts into Godavari district. By 1881 such immigrants were a staggering 99,423 or constitutedas high as 5.61 percent of the total population of the district. The eighties witnessed faster decennial growth rate of population (15.8%) compared to the

Table 3.10: Index Numbers of Price of Rice, Second Sort

Year	Godavari	Krishna	Kurnool	Cuddapah	
1	2	3	4	5	
1859-60	63.54	84.12	109.93	107.58	
60-61	64.80	85.74	111.19	114.80	
61-62	84.12	96.75	112.82	125.63	
62-63	93.50	106.14	116.61	138.63	
63-64	85.74	120.94	152.17	137.72	
64-65	95.49	129.96	167.87	160.29	
65-66	96.40	121.12	163.18	166.61	
66-67	111.19	137.00	195.67	189.89	Fam
67-68	73.48	113.18	146.75	158.66	
68-69	70.04	97.11	133.93	148.56	
69-70	87.00	111.19	132.49	133.75	
70-71	71.48	99.28	127.62	125.63	
71-72	75.27	97.29	104.69	93.68	
72-73	82.13	92.78	109.93	109.48	
73-74	75.27	97.29	104.69	93.68	
74-75	74.91	83.93	99.64	79.06	
75-76	69.49	76.71	98.19	92.96	
76-77	116.25	138.09	195.85	183.21	Fam
77-78	186.46	199.28	215.16	203.79	peri
78-79	153.79	169.31	157.94	142.96	
79-80	92.96	100.36	115.52	105.60	
80-81	81.95	89.17	115.16	103.43	
81-82	80.87	89.17	118.05	97.83	
82-83	82.74	97.11	117.33	99.00	
83-84	96.57	107.58	112.81	95.13	
84-85	93.14	106.14	118.77	106.36	
85-86	102.35	108.30	116.97	103.79	
86-87	99.28	99.63	112.45	97.83	
87-88	95.49	91.34	102.70	92.60	
88-89	98.56	101.62	118.41	97.83	
89-90	99.28	106.86	124.55	107.22	
1890-91	102.35	107.22	123.64	121.48	

Notes: Computed from the data available in the Administration Reports

the seventies (10.2%).[27] But as we have already seen, the eighties saw a temporary set back to paddy cultivation - in some years even the extent of Rice area showing a decline. Rice-production must have gone down compared to the late seventies. As stated earlier the influx of immigrant population in the post-1876-78 famine period must have greatly decreased the bargaining power of the labouring population. (See Appendix 2). A section of these labourers who remained as casual labourers and who were increasingly paid in cash instead of grain must have put pressure on the demand for coarse grain like Cholum Ragi and variga. And price of rice must have risen in sympathy with the price of coarse cereals. And those labourers who were attached continued to be paid in grain/paddy must have retained their demand for paddy. In other words, given a situation of a temporary set back to paddy cultivation, but with an added demand for paddy and coarse grains, the conditions were conducive for an upward movement for rice-prices. In the peculiar circumstances of Godavari district where by 1891, agricultural labourers constituted 19.1% and other labourers constituted 11.5%, i.e., total labourers formed well-over 30.3% of the total population, the explanation of price-rise in terms of demand for foodgrains should not be surprising. Appendix 3 gives particulars of labourers as proportion in the total population of the district in 1891. Hence we find a rise in prices of paddy thereby retaining a certain stimulus for the paddy growers of the Godavari district. Appendix 4 gives data on seers of rice (second sort) per rupee for a period of 27 years beginning with 1874-75 at different taluks/centres of the Godavari district.

27/ Statistical Atlas of Madras Presidency. 1908, p.94.

Section IV

TRADE

In the sixties of the 19th century Cocenada Coringa and to some extent Naresapore were the major (first class) markets of the Godavari district. The only towns which can be considered as really offering a market for the disposal of grain exclusive of the great sea ports of Cocanada and Coringa were Rajamundry, Jaggampeta and Samarlokota. Nellapalli and Injeram might be included in this category but actually they formed a part of Coringa.

A large number of these small "markets" were not centres for the disposal of agricultural produce but rather fares at which cloth, garden produce, fish and other perishable articles of consumption were brought and sold.

Large quantities of dry grain especially cholum, were sent by water to Ellore. Paddapur was the chief market for cane sugar and jaggery. The merchants of Peddapur would buy the articles from the ryots and send it all over the region.

In the deltas the surplus produce used to be conveyed either to sea-ports or to one of the inland markets. Some particulars of sea-borne trade via the three ports of coringa, cocanada and Narsapore for a period of 14 years beginning with 1862-63 are provided in table 4.1 Unfortunately the commodity patterns are not available. This much is evident from the table that the tonnage of goods traded had increased well over three fold during this short period. Values of exports not

Table 4.1: Particulars of trade of the ports in Godavari District*

Year	Total No. of Vessels (Foreign and Native)	Tonnage	Value of		Duty on	
			Exports	Imports	Exports	Imports
			Rs.	Rs.		
1862-63	423	82,611	33,51,024	10,00,758	40,729	3,931
63-64	478	83,982	47,78,780	9,34,026	27,139	6,415
64-65	577	1,18,010	56,68,244	10,90,046	26,210	6,874
65-66	592	1,48,715	88,74,321	11,67,625	34,522	9,310
66-67	476	1,33,763	64,12,041	18,14,348	39,470	7,361
67-68	537	1,37,297	48,24,602	14,45,878	10,070	68,081
68-69	607	1,62,418	80,57,106	18,59,388	9,811	87,155
69-70	580	1,65,370	89,56,078	20,70,487	13,500	16,753
70-71	563	1,76,694	59,21,558	19,01,118	13,923	1,13,870
71-72	358	1,44,014	86,66,326	15,62,392	21,546	12,119
72-73	414	1,50,255	64,39,807	13,83,215	44,591	9,797
73-74	502	1,68,244	67,12,136	16,20,870	70,953	7,518
74-75	495	2,40,976	90,32,539	20,42,388	1,52,600	6,058
75-76	580	2,83,267	88,64,153	21,72,477	98,194	6,031

Source: Reports on the Administration of Madras Presidency, Various Issues

* The Godavari ports include Coringa, Cocanada and Narsapore

far exceed the values of imports throughout the period but the rate of increase in the values of exports far surpassed that of imports.

The ryots as a rule did not convey their produce to the market. The merchants used to visit villages, make their bargaining taking away the grain by land or water depending on the facility afforded by the localities. In some places the merchants used to bear the expense of removal from the ryot's granary; in others the price paid included conveyance to the channel bank and shipment on board the dhoony (raft)

In the three and half decades following the construction of anicut at Dhawaleswaram on the Godavari river one could notice the rapid strides that the paddy cultivation made in terms of acreage and produce, although it was found to be occasionally punctuated by setbacks. We had also touched upon earlier the insufficient local demand for food grains - especially paddy - and other produce in the later phase. For quite some time trade in the agricultural produce had remained sea-borne via the Cocanada port. Lack of a continuous series of data on trade - either water-borne or land borne -- for the entire period hampers a detailed analysis. We could cull out some data on the grain exports from the Godavari district through the Cocanada port, for the terminal years 1888/89 - 1891/92. Table 4.2 shows these particulars.

Table 4.2: Sea-borne grain trade of the Godavari district

Year	Imports Tons	Exports Tons
1888-89	Nil	37,315
89-90	do	47,491
90-91	do	50,872
91-92	do	35,496

Table 4.3

Boat traffic on the three Canals of the Godavari district, 1890-91

Item	Cocanada Canal			Samarlakota Canal			Ellore canal including thro' traffic		
	Up	Down	Total	Up	Down	Total	Up	Down	Total
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)
Cotton raw and manufactures	26,865	19,95,174	20,22,039	-	-	-	1,70,940	1,02,340	2,73,280
Paddy & Rice	39,574	10,13,038	10,52,612	1,54,442	30,738	1,85,180	58,240	92,950	1,51,190
Other food-grains	4,200	70,950	81,150	50	3,550	3,600	9,84,750	1,66,550	11,51,300
Total food-grains	43,774	10,84,038	11,33,762	1,54,492	34,288	1,88,788	10,42,990	2,59,500	12,02,490
Oils	20,550	1,11,900	1,22,450	600	-	600	9,68,100	8,87,850	18,55,930
Oilseeds	16,300	11,09,650	11,25,950	1,100	8,250	9,350	2,91,950	4,16,350	7,08,300
Tobacco	3,600	6,18,000	6,21,600	25,500	16,800	42,300	2,80,500	1,02,900	3,83,400
Grand Total	29,84,564	86,69,311	116,53,875	2,17,923	2,61,763	4,79,686	39,22,548	37,98,170	77,20,718

Source: Board's Proceedings (Rev. Settlement, Land Records and Agriculture) dt. 31.12.1892 No. 432

In addition to these sea-borne trade, the Godavari district used to export foodgrains (mainly paddy) and oilseeds to the Hyderabad Native State and other parts of Andhra in the post-anicut period. However, data on this aspect are hard to come by.

As for the canal traffic, again we are handicapped by a meagre data. Table 4.3 gives particulars of values of cotton-raw and manufactures - foodgrains, oil and oil seeds and tobacco on three canals viz., Cocanada canal, Samarlakota canal, and Ellore canal. However, it should be added that these data pertain not to the Godavari district alone but that of the neighbouring district of Krishna as well. This is especially true of the traffic on the Ellore canal which includes the traffic. As is clear from the earlier analysis of cropping pattern, although areas under cotton and tobacco (which is not specifically mentioned) were very small the down traffic (towards Cocanada port) of cotton and tobacco on the Cocanada canal was considerable. This was possible because of the inter-district trade flow from Hyderabad and other districts of British India to the Cocanada port. The Ellore canal passes through parts of the Krishna District as well. Again, we find considerable traffic - both up and down - in cotton as well as tobacco. By 1890-91 Beswada became a terminal railway station for two railway lines, viz., the Nizam Guranteed State Railway and the Krishna Bellary line. Hence we find trade in cotton and tobacco flowing up (towards Bezwada) as well.

Table 4.3 gives only a partial picture of the trade of the Godavari district as it gives particulars of traffic only on three canals. Table 4.4 and 4.5 give particulars of the number of boats, tonnage, ton mileage and value of goods for the half year ending 30th September 1889 and 1889 respectively.

Table 4.4: Traffic on Navigable canals for the half-year ended on 30th September 1889: Godavari Deltas

of Deltas	Laden boats (No.)	Tonnage Tons	Ton mileage (Length in miles)	Value of goods (Rs.)
1	2	3	4	5
Eastern Section	3,506	60,944	19,06,758	53,54,707
Central Section	783	17,932	3,76,737	4,45,876
Western Section	3,506	59,763	19,49,623	50,90,578
Total	7,795	1,38,639	42,33,118	1,08,91,161

Source: G.O.No.1319 Misc. Dt. 18th March 1981, PBR (Revenue Settlement Land records and Agriculture)

Table 4.5: Traffic on Navigable canals for the half year ended on 30th September 1890: Godavari Deltas

Section of Delta	Laden boats (No.)	Tonnage (Tons)	Ton mileage (Length in miles)	Value of goods (Rs.)
Eastern Section	3,291	62,509	13,98,904	54,34,674
Central Section	612	10,238	2,69,123	7,40,150
Western Section	3,380	55,589	19,64,504	39,04,391
Total	7,283	1,28,336	35,32,531	1,00,79,215

Source: G.O.No.319, Misc. dt. 18th March 1891, PBR, (Revenue Settlement Land Records and Agriculture

The Eastern section of the Godavari Delta had 6 navigable canals, viz., Bank canal, Cocanada canal, Samarlakota canal, Mundapeta canal, Coringa canal and Injaram canal. There were three canals in the Central section, viz., the Gannavaram canal, bank canal, and Amalapuram canal. In the Western section the navigable canals were Gostanadi-Vuyur canals, Bank canal, Narasapur canal, Ellore canal, Attili canal, Venkiah and Weyeru canals and Undi canal.

The items of the traffic include foodgrains, salt, cotton, oilseeds, nuts and oil, hemp, building material, fuel, timber and bamboos, tobacco, indigo, turmeric, jaggery and sugar, tamarind, fruits and vegetables, coconut, fish (salt and dry), skins and hidres, horn, treasure and other miscellaneous items.

As for the details of the quantities of goods transported by canals table 4.6 helps us to have some view of the magnitudes for a couple of years, 1891-92 and 1892-93. Unlike in tables 4.4 and 4.5 these quantities relate to the entire year and for all the canals. Quantities of foodgrains transported on the canals constitute more than 30 per cent of the total quantum of goods shipped by boats, although in terms of value they form only a small portion of the total value of goods transported.

Thus, inspite of the transport bottleneck that we discussed earlier, we do find a significant increase in the volume of trade in the Godavari district. However, this is not to claim that we could capture the entire picture of trade transactions. Road-borne Trade Statistics handly exist. But the little information that we could cull

out does indicate the broad contours of trade transacted in the district. It only needs to be added that perhaps a more efficient and quicker transport system would have further facilitated and enhanced the volume of trade in the agricultural commodities.

Table 4.6

Comparative returns of traffic carried on the navigable canals for the years 1891/92 &1892/93

Godavari Canals

Nature of cargo	Up traffic		Down traffic		Total tonnage both ways		Ton milege		Value of goods	
Boat traffic	1891-92	1892-93	1891-92	1892-93	1891-92	1892-93	1891-92	1892-93	1891-92	1893-94
Cotton,raw & manufactured	2,542	4,662	4,935	3,326	7,477	7,988	-	-	44,63,767	37,21,380
Woollen,raw & manufactured	2	6	5	19	7	25	-	-	17,500	80,500
Carts and trams	-	197	-	35	-	232	-	-	-	6[illegible],600
Paddy and rice	9,096	50,766	28,927	41,250	38,023	91,976	-	-	18,74,571	29,65,166
Other foodgrains	45,668	1,832	8,489	7,420	54,157	9,252	-	-	27,07,850	4,62,600
Hides and skins	96	147	138	198	234	345	-	-	1,87,200	2,76,000
Liquors	1,245	453	153	632	1,398	1,085	-	-	5,59,200	4,34,140
Metals	9,420	21,983	3,272	10,021	12,692	32,004	-	-	50,82,640	1,06,68,240
Oils	6,713	1,613	6,739	701	13,452	2,314	-	-	20,17,800	3,47,100
Oilseeds	8,109	21,222	31,764	37,472	39,873	58,694	-	-	19,93,650	29,34,700
Provisions	5,094	5,476	1,327	6,160	6,421	11,633	-	-	6,42,100	11,63,600
Salt	4,595	5,141	1,731	1,780	6,326	6,921	-	-	5,66,080	553,680
Spices	76	237	13	175	89	412	-	-	89,000	4,12,000
Sugar	3,952	3,111	8,165	8,853	12,117	11,964	-	-	13,25,200	7,86,227
Tobacco	1,620	2,157	2,815	2,522	4,435	4,679	-	-	8,80,500	14,03,700
Building materials	11,958	7,424	51,758	49,269	63,716	56,693	-	-	1,30,389	2,12,591
Misc. goods	12,910	8,110	14,168	7,203	27,078	15,313	-	-	34,99,371	17,38,911
Timber	273	13,167	2,492	5,149	2,765	18,316	-	-	2,21,200	14,65,280
Firewood	2,028	1,393	1,733	1,564	3,761	2,957	-	-	22,566	17,742
Bamboos	126	265	2,525	4,909	2,651	5,174	-	-	53,020	1,03,480
Coal & cake	50	1,300	1,800	1,484	1,850	2,784	-	-	22,200	33,408
Jute	7	-	134	-	141	-	-	-	16,920	-
Treasure	-	16	-	-	-	16	-	-	55,42,357	50,09,288
Total Boat traffic	125,580	150,638	173,083	190,142	298,663	340,780	-	-	3,18,54,163	3,48,39,333

(contd.....)

Table 4.6 (cont..)

Nature of cargo Raft traffic	Up traffic 1891-92	1892-93	Down Traffic 1891-92	1892-93	Total tonnage both ways 1891 -92	1892-93	Ton millege 1891-92	1892-93	Value of goods 1891-92	1892-93
Timber in logs	1,465	999	30,555	25,780	32,020	26,729	-	-	24,01,500	20,08,425
Squard timber	295	467	172	1,917	467	2,384	-	-	37,360	1,90,720
Sleepers, broadgauge	13	3,961	-	104	13	4,065	-	-	2,080	6,50,400
" metre gauge	-	-	-	1	-	1	-	-	-	150
Scantling	-	16	4	937	4	953	-	-	240	570,180
Poles	-	376	701	23,839	701	24,215	-	-	28,040	9,68,600
Firewood	-	-	-	-	-	-	-	-	-	-
Bamboos	234	616	41,741	48,751	41,975	49,367	-	-	8,39,500	9,87,340
Reeds	-	-	-	-	-	-	-	-	-	-
Total Raft traffic	2,007	6,435	73,173	101,329	75,180	107,764	-	-	33,08,720	48,62,815
Grand Total Boat & Raft traffic	127,587	157,073	246,256	291,471	373,843	448,544	10,705,460	12,126,745	3,51,62,883	3,97,02,148

Sources: Board of Revenue Proceedings (Revenue Settlment, Land Records and Agriculture) No. 5719 dt. 5 - 10 - 1893 pp. 4-5

SECTION V

A RESUME AND AN ARGUMENT

An attempt is made in this section to piece together various threads of arguments made in earlier sections and see if there is a consistent pattern.

The pre-anicut situation was characterised as subsistence economy. The colonial regime saw the dwindling land revenues and the miserable conditions of the people and visionaries like Sir Arthur Cotton convinced the East India Company of the great potentialities of improving situation and enhancing the land revenue. An anicut was built by early fifties and the agrarian scene no longer remained static thereafter. Water was eagerly availed of by the Godavari cultivators although there were problems of waterlogging, late supply of water and excess watering of crops in the initial stages. The intended survey and settlements and the proposed levy of assessment and water rates drove some farmers to give up water and resume dry cultivation. After things had settled down and the Godavari ryot got used to this phenomenon of irrigation, specialisation in paddy cultivation became the order of the day. Contrary to the expectations of the Irrigation Engineers like Cotton, the Godavari cultivator continued to specialise in rice cultivation while on the uplands gingelly and other oil seeds (the traditional cash crops of the district) instead of cotton and sugarcane continued to be preferred. Land revenue and water tax had become burdensome on the cultivators. Even some of the Revenue officials and Irrigation engineers themselves testified to this fact.

By Mid-seventies, one is convinced by the meagre empirical evidence that one comes across that the district became surplus in terms of foodgrains. There were certain constraints for an ever increasing local demand for foodgrains -- constraints imposed by the iniquitous asset distribution, weakening bargaining power of the labouring people, etc. The district had certain peculiar features in terms of the composition of socio-economic groups. The socially under-privileged sections historically constituted a sizeable proportion in the Godavari district. The existence of a large number of zamindaries in the district, the rack-renting of the tenants and the general exploitative ethos of the rural scene left a sizeable quantum of working people who were socially and economically handicapped. Towards the end of the eighties/labourers -/ both agricultural and others - constituted well over 30% of the total population in the district.

On the one side we find an agrarian expansion and growth in terms of acreage, productivity and production and on the other we find a deterioration in the conditions of the labourers. Paddy which became the major produce of the district could not find a sustained local demand all through the period. The influx of migrants from the famine-affected districts into the Godavari (1876-78) and the consequent demand for coarse grains, and sympathotic rise in the price of rice in the eighties must have given a temporary relief to the paddy growers.

But the foodgrain surpluses had to seek market elsewhere some time or the other. Hence cultivators were looking for markets outside the district. The transport system that had evolved with the incoming of irrigation i.e., navigation and road transport - could serve the purpose upto a certain point. But beyond a stage the system broke down and the grain-merchants and cultivators increasingly felt the need for a quicker and more efficient transport - the railways.

It should be interesting to probe deeper into the decision making process involved in laying the rail roads in the country. The rail-road came into coastal Andhra - the granaries of the region - rather late, four decades after the first iron-horse strode across the country. On the contrary we find South-western Andhra - for instance Cuddapah - endowed with rail roads by 1870's. The reasons are not far to seek. The districts of Cuddapah and Kurnool increasingly came to specialise in growing cash crops - especially cotton. Naturally these districts were to be linked up with the port cities of Bombay and Madras. On the other hand, the Godavari cultivator emerging from a long period of stagnation and subsistence, having got used to consume dry grains like kod rice, cholum, cumbu, and other varieties, being unable to bear the costs involved in growing the cash crops preferred to specialise in paddy cultivation. Unlike the British cotton lobby which was aggressive and powerful both inside and outside the British Parliament, growers of foodgrain did not have a lobby either in the Government in India or Britain. The Punjab's case was different. Punjab and Northwestern regions were politically troublesome areas for the colonial regime. Added to this the Punjab wheat and cotton continued to have demand abroad.

In any case coastal Andhra provided an ever increasing amount of land revenue for the Madras Presidency. Inspite of the fact that the neighbouring Krishna district was traditionally a cotton-growing region, the coastal region including Nellore was primarily taken as a rice-specialising area and so goes the urgency to lay a railway line. The argument that there were certain railway lines connecting the rice growing areas of North India with the drought prone areas in the country including those in the South does not cut much ice. That could have been a by-product of some other powerful reasons. For, if that were the major reason the

the coastal region which was nearer to Rayalseema would have been connected with the latter much earlier.

To sum up, the anicut and irrigation under the system had noticeably helped the lot of the cultivators - though the same cannot be said about the labourers. Agricultural growth went hand in hand with stagnation and even deterioration in the lot of the labourers. This was a striking paradox in the rural set up. On the whole apart from the rent-squeezing intermediaries - whose role has not been elaborated in this paper, a heavy tax burden imposed by the colonial regime and a callous insensitivity towards the provision of infrastructural facilities acted as speed-breakers and slowed down the growth process.

In any case this case study throws out certain policy implications not all irrelevant to the problems of agricultural growth and development

Firstly, growth per se might bring in certain distortions and uneven improvements in the lot of different sections of the agricultural communi

Secondly, there might be divergence of interests in the choice of crops - a divergence between the cultivators' preferences and those of the authorities. To a large extent this problem arises in a subsistence or a semi-subsistence agriculture.

Thirdly, when irrigation is newly introduced in a hitherto dry-farming region, problems of water management, water-logging and timely supply of water might create teething troubles.

Fourthly, growth and expansion of agricultural markets have to be consciously planned taking into consideration the transport requirements of the region.

Lastly, caution has to be exercised in imposing fresh taxes in a newly irrigated region. Haste in trying to realize quick returns from the farmers might result in frustrations and resentment in farmers. What has happened in the Ghataprabha-Mallaprabha region of Karnataka in recent times is essentially a continuation of what had happened in the Godavari district during the Sixties of the 19th century.

Appendix 1

Details of the villages of the Central & Eastern Deltas of the Godavari District, 1861.

No.	Taluks	No. of govt. villages	No. of Zamindary/ Proprietary village	No. of Kattubadi Agraharams	Total
1.	Nagaram	50	-	-	50
2.	Amalapuram	81	23	5	109
3.	Rali	38	19	2	59
4.	Kota, Ramachandra-puram	55	21	1	77
5.	Bikkavolu	48	-	5	53
6.	Kapavaram	94	-	3	97
7.	Cocanada	3	53	-	56
8.	Pittapur	2	66	-	68
9.	Peddapuram	14	44	-	58
10.	Lingamparru	111	112	-	223
11.	Kottapalli	56	340	3	399
12.	Rajahmundry	19	21	2	42
13.	Pentapadu Parag na	35	-	29	64
14.	Tadimalla	46	46	7	99
15.	Chintalapudi	54	-	40	94
	Total	706	745	97	1,548

Source: Letter from R.E. Master, Officiating Dy. Director of Rev. Settlement Godavari Dt. to H.Newill, Director of Rev. Settlement dated Narasapur 24th April, 1861. No. 81 Papers relating to the settlement of the Central and Eastern Deltas and of the upper Taluks of the Godavari Dt. 1916. p.6

Appendix 2

Average wagerates of wages for unskilled rural labour in the Godavari District

(Rates per day)

Year	Wage rate per day Rs. a - p
1877 - 78	0 - 3 - 3
78 - 79	0 - 3 - 0
79 - 80	0 - 2 - 9
80 - 81	0 - 2 - 9
81 - 82	0 - 2 -10
82 - 83	N . A
83 - 84	0 - 2 - 9
84 - 85	0 - 2 - 9
85 - 86	0 - 2 - 9
86 - 87	0 - 2 -10
87 - 88	0 - 2 - 8
88 - 89	0 - 2 - 7
89 - 90	0 - 2 - 8
90 - 91	0 - 2 - 9

Source: Administration Reports of the Madras Presidency. Various Issues.

Notes : 16 annas make one rupee
12 pies make one anna.

Appendix 3

Abstract of the village-war census tables of occupation: Godavari Dt.

Taluk/ Divisions	Agriculturists				Other Labourers		Traders		Artisans				Others	
	Landholders		Agricultural Labourers						Weavers		Other artisans			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Tumi	24,045	41.9	4,560	7.9	10,482	18.3	7,752	13.5	2,201	3.8	3,091	5.4	5,317	9.2
Pithapuram	26,595	31.8	15,350	18.3	10,565	12.6	10,248	12.2	5,876	7.0	4,933	5.9	10,257	12.2
Cocanada	23,195	19.2	9,857	8.1	30,425	25.2	19,993	16.5	2,650	2.2	8,240	6.8	26,547	22.0
Peddapuram	55,889	34.5	34,399	21.3	25,939	16.0	11,295	7.0	6,778	4.2	9,258	5.7	18,283	11.3
Rajahmundry	42,538	30.1	8,788	6.2	28,379	20.1	17,381	12.3	4,987	3.5	13,348	9.5	25,750	18.3
Ramachandrapuram	106,889	40.9	62,647	24.0	27,827	10.7	13,924	5.3	13,848	5.3	12,113	4.6	23,946	9.2
Amalapuram	112,415	43.9	61,313	23.9	13,158	5.1	25,043	9.8	6,077	2.4	12,970	5.1	25,105	9.8
Narasapuram	107,982	46.9	45,502	19.8	21,299	9.2	19,732	8.6	7,031	3.0	9,820	4.3	18,959	8.2
Bhimavaram	54,260	44.5	26,858	22.0	13,465	11.0	7,624	6.3	3,197	2.6	5,396	4.4	11,194	9.2
Tanuku	91,767	45.0	40,286	19.7	16,082	7.9	15,539	7.6	8,295	4.1	9,845	4.8	22,234	10.9
Ellore	77,177	44.9	14,479	8.4	21.865	12.7	19,605	11.4	5,779	3.4	9,103	5.3	23,979	13.9
Ternagudem	47,630	37.0	33,913	26.4	9,108	7.1	13,871	10.8	3,820	2.9	7,627	6.0	12,653	9.8
Kodavaram, Polavaram, Pallavaram	64,595	66.6	7,567	7.8	7,935	8.2	5,578	5.7	575	0.6	4,090	4.3	6,666	6.8
Badrachalam	19,492	46.0	10,291	24.3	1,884	4.5	2,076	4.9	590	1.4	1,725	4.1	6,278	14.8
Total	854,467	4.1	375,810	19.1	238,413	11.5	189,661	8.1	71,704	3.4	111,559	5.4	237,168	11.8

Source: Statistical Atlas of Madras Presidency, 1895, p.61.

Appendix 4

Godavari: Average annual prices at each station in the District

(Seers per one Rupee)

Taluk/ Centre	Tuni	Pitha-puram	Pratti-padu	Pedda-puram	Rajah-mundry	Coconada	Coringa	Ramacha-ndrapuram	Alamur	Amala-puram	Kothap-peta
75	19.2	20.6	18.8	19.6	20.1	19.8	17.7	-	20.8	21.8	20.1
76	20.0	21.9	22.1	21.8	21.7	21.3	19.0	-	22.5	23.2	22.4
77	13.0	13.9	13.7	13.4	13.2	12.8	12.8	10.4	13.8	14.3	13.5
78	7.6	8.7	7.9	8.2	8.2	8.3	8.4	8.6	7.8	8.4	8.0
79	8.7	9.6	10.3	9.7	9.7	9.7	10.0	10.6	9.8	9.4	9.4
80	16.5	17.4	16.0	16.9	15.0	16.0	15.8	17.0	16.0	17.3	16.2
81	17.5	19.2	17.0	17.9	17.1	17.2	17.8	18.3	18.0	20.3	18.2
82	16.4	19.2	17.2	17.5	18.2	17.7	18.6	19.5	18.2	21.1	19.4
83	16.2	17.3	16.3	16.9	17.0	16.8	18.3	18.8	17.8	19.4	17.5
84	15.3	15.1	15.2	15.4	15.3	15.3	16.5	17.4	16.4	17.7	16.2
85	16.0	15.1	16.0	15.6	15.9	14.9	15.7	17.2	16.4	17.2	16.4
86	13.3	14.5	13.2	14.5	14.8	14.6	14.3	14.7	15.0	15.4	14.8
87	14.5	15.3	14.2	14.4	15.9	15.4	14.2	15.7	15.0	15.2	15.2
88	15.0	15.4	15.7	14.8	16.4	16.2	15.7	16.9	16.0	17.0	15.7
89	14.0	14.3	14.6	14.7	15.1	15.4	14.0	15.0	15.0	17.5	16.0
90	14.6	15.1	16.0	15.6	15.0	15.4	14.3	16.1	15.3	18.2	15.7
91	16.3	14.9	16.0	15.9	14.1	15.0	13.7	15.3	14.8	15.6	14.4
92	10.6	11.3	11.3	11.3	12.6	11.3	10.6	11.3	11.2	12.3	11.6
93	11.1	11.8	12.3	12.1	12.3	11.9	12.0	12.4	12.2	14.1	12.6
94	13.0	12.8	12.3	12.7	12.6	12.4	12.3	13.7	13.0	14.1	13.0
95	13.4	13.9	12.5	14.4	14.9	13.8	12.1	14.7	14.0	16.1	14.4
96	14.3	14.6	14.1	15.2	15.5	14.3	14.4	15.4	14.8	15.8	14.1
97	10.8	10.8	11.0	10.8	10.8	10.1	9.9	10.3	10.5	11.8	10.2
98	10.6	9.2	10.5	9.6	.9	8.9	8.5	9.5	9.7	9.7	8.9
99	14.2	12.7	13.6	13.2	13.3	12.1	11.9	14.6	13.8	12.8	12.7
1900	12.1	11.5	11.4	11.2	12.1	10.7	11.0	12.9	12.4	11.7	10.8
1901	10.9	10.2	11.4	9.7	11.4	9.8	10.2	10.2	11.2	10.1	9.3

(Contd.....)

Appendix 4 (Cont...)

Year	Taluk/ Centre	Narasa-pur	Sivakodu	Bhima-varam	Tanuku	Penta-padu	Ellore	Chintaal-pudi	Talla-pudi	Pola-varam	Choda-varam	Bhadsa-chalam
1874 - 75		21.1	19.0	22.3	23.2	19.3	19.1	18.8	19.3	17.9	19.6	18.4
75 - 76		23.8	19.5	23.8	23.8	19.0	21.5	19.6	23.3	19.6	21.4	19.3
76 - 77		14.7	14.3	14,8	14.2	12.8	12.7	12.6	13.5	12.5	13.9	13.3
77 - 78		8.4	8.8	8.9	7.7	7.4	7.8	7.3	7.7	7.4	7.9	8.5
78 - 79		10.3	9.4	10.7	10.0	11.3	10.4	8.5	9.4	8.8	9.3	9.3
79 - 80		17.2	16.0	18.8	16.2	18.3	16.1	14.8	15.6	15.1	16.0	14.9
80 - 81		20.3	18.7	20.1	18.8	20.4	18.7	15.7	17.6	17.2	17.2	18.5
81 - 82		20.4	21.1	20.5	18.6	19.2	17.8	17.3	18.5	18.6	17.2	19.7
82 - 83		18.8	19.8	19.2	17.6	18.5	16.8	16.2	17.0	17.0	15.7	17.9
83 - 84		16.9	16.8	16.5	15.5	15.4	13.8	14.8	15.1	16.3	14.9	15.5
84 - 85		18.3	17.8	16.6	16.7	16.0	14.7	15.6	16.0	16.4	15.2	15.0
85— 86		17.1	16.0	15.0	15.1	15.0	14.7	14.9	14.5	14.5	15.1	15.3
86 - 87		16.4	15.2	16.2	15.9	14.8	14.8	14.3	14.7	15.0	14.7	15.7
87 - 88		17.6	16.4	17.8	16.3	16.9	15.5	15.7	14.0	15.3	15.6	16.4
88 - 89		16.7	16.1	16.7	15.6	16.1	14.9	14,5	14.2	14.5	14.4	16.3
89 - 90		15.9	16.4	16.8	15.1	15.9	14.1	13.6	14.0	14.0	14.3	16.1
90 - 91		15.6	15.0	15.9	14.9	15.2	13.3	13.3	13.9	14.0	15.3	14.7
91 - 92		11.6	11.4	12.4	12.6	11.7	11.7	11.6	11.5	11.2	11.4	11.9
92 - 93		12.8	13.1	13.4	13.1	12.8	12.7	11.4	12.1	11.9	11.9	12.2
93 - 94		14.0	12.8	13.1	13.4	15.0	13.5	13.1	13.0	12.6	12.4	12.8
94 - 95		15.7	14.8	15.5	15.3	13.6	15.0	14.1	14.8	13.0	13.0	14.1
95 - 96		14.8	14.4	15.5	15.6	13.7	13.9	14.0	13.9	14.3	13.0	13.5
96 - 97		10.5	10.7	11.6	11.0	10.2	11.4	10.3	9.7	10.4	9.6	10.3
97 - 98		9.2	8.9	10.1	9.2	8.7	9.2	-	8.1	8.8	9.9	9.7
98 - 99		14.3	15.3	14.4	13.5	13.2	14.8	13.5	12.5	12.3	12.5	12.5
1899-1900		11.5	11.2	12.4	12.1	11.1	11.7	-	11.3	10.9	10.5	11.0
1900-1901		8.6	12.3	10.7	10.5	10.3	9.9	8.9	10.3	9.6	9.4	10.3

Source: Statistical Atlas of Madras Presidency, 1908, pp. 122-23.

Appendix 5

No. & area of villages, area in occupation, population and incidence of Land Revenue in Godavari district, 1891

Taluk Division	No. and area of villages exclusive of Tributory states							Total	
	Ryotwari			Inam villages		Zamindari villages			
	No.	Area Govt.	Area Minor Inam	No.	area	No.	Area	No.	area
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Acs.	Acs.		Acs.		Acs.		Acs.
Tuni	-	-	-	-	-	51	77,327	51	77,327
Pitahpuram	-	-	-	-	-	52	122,880	52	122,880
Cocanada	1	10,912	122	-	-	59	110,566	60	121,600
Peddapuram	112	345,766	25,016	57	52,400	63	46,433	232	469,615
Rajahmundri	101	197,241	37,530	5	6,577	19	56,176	125	297,324
Ramachandrapuram	133	144,336	64,798	4	1,264	27	45,251	164	225,649
Amalapuram	115	124,225	83,411	10	5,446	45	128,866	170	323,968
Narsapur	120	201,616	55,461	4	10,477	15	12,363	139	279,917
Bhimavaram	87	166,465	24,112	3	2,303	48	62,297	138	205,177
Tanuku	88	109,914	40,453	32	16,670	60	70,838	180	237,875
Ellore	87	227,138	10,860	53	72,195	102	156,538	242	466,731
Yernagudem	56	358,930	30,285	17	21,889	72	187,217	145	596,321
*Chodavaram	-	1,437	179	-	-	-	533,655	355	535,271
*Yellavaram	-	70,428	575	-	-	-	273,280	415	344,283
*Polavaram	-	53,469	3,131	-	2,326	-	51,503	79	110,429
*Bhadrachalam	-	480,712	-	-	-	-	102,328	325	583,040
+ Inam villages	-	-	-	-	-	-	-	-	-
Zemindary villages	-	-	-	-	-	-	-	-	-
Total		2,442,589	3,57,733	-	191,547	-	2,037,538	2,872	5,029,407

(contd...)

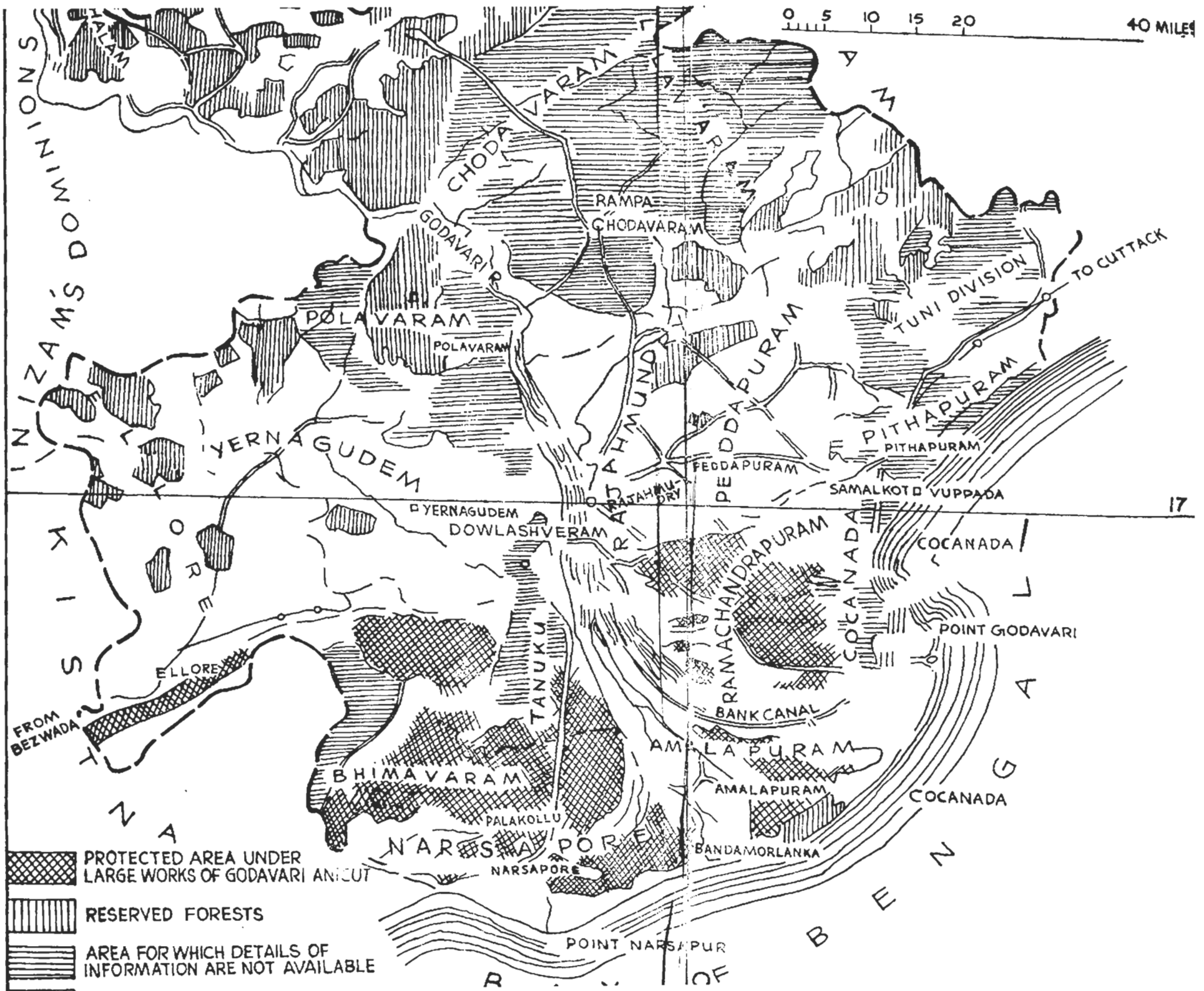
Appendix 5 (cont..)

uk/ ision	- Deduct area of - Poramboke& Land reserved for communal purposes	Forest	Zemindari and other land for which returns are not available	Total	Remainder arable area (Govt&Inam)	Cultivable area	Fallow	% if total arable area occupied	1901 Population	Balance of land revenue per head of population (R - a - p)	Remarks.
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
puram	-	-	77,327	77,327	-	-	-	-	8,025	1 - 11 - 4	
da	-	-	122,880	122,880	-	-	-	-	-	-	
	7,749	7,000	110,526	119,275	2,325	789	953	78.8	40,553	1 - 2 - 6	
puram	23,412	134,030	148,392	305,834	163,781	77,212	76, 853	94.1	95,705	1 - 9 - 5	
undri	38,228	50,580	56,176	145,044	152,280	63,270	78,086	97.2	147,031	1 - 3 - 8	
handrapuram	24,302	-	48,426	72,728	182,921	158,382	24,022	99.6	221,995	4 - 6 - 7	
puram	31,844	9,362	129,090	170,296	153,672	122,692	25,691	96.1	180,216	3 - 8 - 7	Highly taxed Delta Taluks
pur	43,080	10,114	23,568	76,762	203,155	126,141	58,353	90.8	213,506	3 - 5 - 1	
aram	25,308	-	62,297	87,605	117,572	92,210	17,045	93.1	84,160	5 14 - 2	
a	20,229	4,500	76,671	101,400	136,475	112,842	22,803	99.5	124,731	5 - 4 - 2	
e	36,090	23,040	186,767	245,897	220,834	90,102	78,596	76.5	98,101	2 - 6 - 7	
gudem	7,396	97,100	326,864	431,360	166,961	78,217	66,903	86.9	88,347	1 - 9 - 6	
avaram	316	-	533,655	533,971	1,300	339	965	100.0	-	-	
avaram	38,125	-	273,280	311,405	32,870	7,669	25,140	99.8	-	- -	
aram	244	-	51,503	51,747	50,682	17,067	21,299	65.4	-	- -	
achalam	107,967	314,822	145,406	568,195	14,845	9,571	-	64.4	6,742	0 - 07 - 11	
villages	-	-	-	-	-	-	-	-	84,343	0 - 10 - 2	
dari villages	-	-	-	-	-	-	-	-	685,327	1 - 1 - 2	
tal	398,350	650,548	3,421,726	1,607,681	1,607,681	956,503	496,707	92.5	2,078,782	2 - 5 - 5	

e divisions were formed in October 1891 and accurate particulars as to the per of ryotwari, I[illegible]d population are included under the taluks out of ch the divisions were formed
Govt. taluks

Source: Statistical Atlas of Madras Presidency, 1895, pp.64 -65

Notes:- 16 anna make one rupee
12 pies make one anna.


0 5 10 15 20 40 MILES
NIZAM'S DOMINIONS
CHODAVARAM
GODAVARI R.
RAMPA CHODAVARAM
TUNI DIVISION
TO CUTTACK
POLAVARAM
POLAVARAM
PEDDAPURAM
PITHAPURAM
PITHAPURAM
PEDDAPURAM
SAMALKOT
VUPPADA
17
YERNAGUDEM
YERNAGUDEM
DOWLASHVERAM
RAJAHMUNDRY
GODAVARI R.
COCANADA
COCANADA
RAMACHANDRAPURAM
POINT GODAVARI
BANK CANAL
ELLORE
FROM BEZWADA
TANUKU
AMALAPURAM
AMALAPURAM
BHIMAVARAM
PALAKOLLU
COCANADA
NARSAPORE
NARSAPORE
BANDAMORLANKA
POINT NARSAPUR
BAY OF BENGAL
PROTECTED AREA UNDER LARGE WORKS OF GODAVARI ANICUT
RESERVED FORESTS
AREA FOR WHICH DETAILS OF INFORMATION ARE NOT AVAILABLE