Public Works (1898) Department.

G.O., No. 389

Dated 16 February 1898

[Despatch Abstract.]

Lt.-Col. W. L. C. Baddeley, R.E., Supty. Engr. : informing that H.E. the Governor in Council is not prepared to reconsider the question of Mr. de Winton's appointment as Asst. Chief Engr. & Secy. to Govt.

E
16-2-98

[P. W. 25.
1,000—30-11-97.]

Indexed.

BACK PAPERS.

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

FURTHER PAPERS.

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

[43 / 597]

Public Works DEPARTMENT.

C. No. 664

[4 / 599-14-10-97.]

DEPARTMENT.

Papers to be read in proceedings :—

Again G.O., dated 189 , No.

Again G.O., dated 189 , No.

Current No. 664 of 1898, dated 29.12.97, from Lt-Col. W.L.C. Baddeley Rq.

" " " 189 , " , "

" " " 189 , " , "

ORDER. No 389 Wg dd 2-7-98

Lieut-Colonel W.L.C. Baddeley is informed that while fully recognising his professional capacity and good services, His Excellency the Governor in Council is not prepared to recommend the creation of the desired appointment as acting Chief Engineer & Secretary to Govt.

Chief Secretary

15.2.98

Lt-Col. W.L.C. Baddeley Rq 17/2/98

BACK PAPERS.

[43/609]

Public Works DEPARTMENT.

C. No. 664

HIS EXCELLENCY THE GOVERNOR.
THE HON'BLE SIR HENRY BLISS, K.C.I.E.
THE HON'BLE MR. GROSE, C.I.E.

SUBJECT.

Lt Col Baddeley's appeal against supersession.

FOR ORDERS.

Lt. Col. Baddeley, R.E, in the --- letter dated 29th December 1897, attached, on the subject of his supersession by Mr. deWinton, asks that His Excellency will again consider all the facts connected with his service.

2. In para 3 he points out that his seniority in the Department was settled by G.O. No. 1005 W dated 28th March 1888, & that he has always ---- hitherto been considered Mr. deWinton's senior. This is true, but the fact that Col. Baddeley superseded 6 Cooper Hill officers, who joined the --- Department 9 months before he did, has always been considered a grave injustice by those officers, seeing that they did not count their service from the date on which they left the College, as stated in para 2 of the Resolution printed with the above G.O. Also --- para 5 of the same Resolution emphasizes the principle of selection -- for merit.

3.

3. In paras 4 & 5 Col. Baddeley -- calls attention to his services -- during famine &c. His record is -- undoubtedly good.

4. In para 6 he calls attention to the loss of pay he suffers by his supersession. It is a fact that if an officer senior to Col. Baddeley had been appointed to act for Col. Campbell, Col. Baddeley would have been the senior officer for promotion to Superintending Engineer II Class, but he has not, up to date, suffered pecuniarily by his supersession, because there has been no vacancy, and his statement that he would, in the ordinary course, have received a step in the Department is not correct.

5. It is submitted that Lt-Col. Baddeley may be informed that, while fully recognising his professional capacity and good services, His Excellency the Governor in Council is not prepared to reconsider the matter.

H.S.H 7.2.98

H.D 11/2/98

J.G 11/2/98

1.2.98

H.E. 1-2-98 R 12-2-98.

43
607

..... DEPARTMENT.

C. No. 664

HIS EXCELLENCY THE GOVERNOR.
THE HON'BLE SIR HENRY BLISS, K.C.I.E.
THE HON'BLE MR. GROSE, C.I.E.

SUBJECT.

FOR ORDERS.

Lt-Col. Baddeley R.E., in the letter dated 29th Dec. 1897 attached on the subject of his supersession by Mr. Hamilton, asks that His Excellency will again consider all the facts connected with his service.

2. In Para 3 he points out that his seniority in the Dept was settled by G/O No 1005 W of 20th March 1888, & that he has always hitherto been considered the senior of Mr. Hamilton's seniors. This is true, but the fact that Col. Baddeley, although he joined the Dept. more than 6 months subsequent to Crofton's with whom

who joined the Dept 9 months before he did has always been considered a gross injustice by those officers seeing that they did not count their services from the date on which they passed the College as stated in Para 2 of the Resolution granted with the above G.O. Also para 5 of the same Resolution emphasizes the principle of selection for merit and seniority

3. In Para 4 of Calcutta attention to his services during Lahore &c - his record is undoubtedly good.

4. In Para 6 the Calcutta attention to the loss of pay he suffers by the supersession - this is a fact that an Officer senior to Col Baddeley had been appointed to act for Col Campbell, Col. B. would have been the senior Officer for promotion to S.C. II Class.

Lt. Col. Baddeley's appeal against supersession

Copy draft

W

For orders -

As submitting the appeal to His Exy. for orders, it will perhaps be necessary to add any remarks may to make with respect to supersession, as the appt. of Chief Engr. is under his selection -

Some explanation is perhaps necessary as regards Lt. Col. Baddeley's statement that he is debarred from drawing his full pay as long as he is a Supdg. Engr. 3rd Class -

The pay of a Lieut. Col. R.E. and Supdg. Engr. 3rd Class is made up as follows -

Staff Surg on Lt. Col. Rs 1002-4-
Staff Surg on S.S. III class - 700---
Diff Rs 1702-4-

But by the rules of
the dept. his Surgeon
restricted to a max:
income of - - - Rs 1573-8-
Difference Rs 108-12-

He therefore loses Rs 108-12-
per month if he stays Surg -
as a Staff Surg 2 class he would
draw: -
Staff Surg on Lt. Col - Rs 1002-4-
Staff Surg on S.S. 2 class - 750---
Total Rs 1752-4-4

the maximum he
drawn in the I.D.
is also - - - Rs 1752-4-
so that he gets his full
Staff pay -
the loss of about Rs
150 per month appears to
Lt. Col. Baddeley is
practically the difference
between the pay of a
Staff Surg 2 class - Rs 1752-4-
& that of a S.S. 3 class - - 1593-8-
difference Rs 158-12-

Cr
8-2-98

Public Works (1898) Department.

CURRENT No. 664

From Lieut Col. W. L. C. Baddeley RE

No.

Dated 29th December 189
Received
Registered } 25 — of ——
Enclosures 7
Spare copies

SUBJECT.

Submitting that the promotion
of Mr de Winton, his Junior,
is most serious to him in
the matter of pay &c.

BACK PAPERS.

G.O.	No.	Department.	Date.
	45-60	P. W. & Fd.	8-1-78 ✓
	3152		11-11-77 ✓
	3060		3-11-77 ✓

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Enclosure No. 1.

List of officers considered eligible for the first of the concessions proposed in paragraph 4 of the Govt of India Resolution of August 10th 1878, No. 2087, on account of failure of health caused by Famine Relief duty.

× × × ×

Enclosure No. 2.

List of officers considered eligible for the second of the concessions proposed in paragraph 4 of the Govt of India Resolution of August 10th 1878 No. 2087; (1) as having shown specially well while employed on Famine Relief duty; (2) as not having drawn any extra allowances while so employed; (3) as not having drawn a salary while so employed in excess of Rs. 600 a month; (4) who have not been recommended for Concession No. 1; the said second concession being an addition to service for pension not exceeding the period of employment on Famine Relief duty.

× × ×

	Designation.
Public Works dept	Lieut. W. L. C. Baddeley, RE. assistant Engineer 1st grade, Madras

× × ×

(True Copy)
R. W. Sorsbie.
Head Clerk P. W. Secty.

E. 5/79

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

10th October 1879, No. 2,038.

Famine Relief.

No. 145. READ THE FOLLOWING PAPER:—

From C. BERNARD, Esq., C.S.I., Officiating Secretary to the Government of India, Home, Revenue, and Agricultural Department (Famine), to J. H. GARSTIN, Esq., C.S.I., Acting Secretary to the Government of Madras, Revenue Department, dated Simla, 10th September 1879, No. 148-C.

IN reply to your letter, No. 1,599-A, dated the 31st July last, I am directed to say that the Governor-General in Council is pleased to sanction the grant of the following concessions to the officers named in the list No. 1 forwarded therewith, who were employed on famine relief duty in 1876-77 :—

(*a*) Special leave on account of failure of health occasioned by relief duty.
(*b*) Of this special leave, the first six months' leave will carry full pay *and* allowances up to a limit of Rs. 600 a-month.

It is to be understood that the special leave should be taken before the end of the year 1880.

2. I am also to convey the sanction of His Excellency to an addition to service for pension of a period not exceeding twelve months in the case of the officers mentioned in the list No. 2, who received no extra allowances and whose salary does not exceed Rs. 600 a-month.

3. I am to request that, with the permission of His Grace the Governor in Council, you will be good enough to favor the Government of India with a report showing the amount of money and of extra service granted to each officer under the orders now passed.

No. 146. ORDER THEREON, 10th October 1879, No. 2,038.

Miscellaneous.

UNDER the authority conveyed by the above communication, His Grace the Governor in Council resolves that, in respect of those officers whose names appear in list No. 1 and who have already had six or more months' leave in consequence of ill-health contracted on Famine Relief duty, the Accountant-General be authorized to offer to them the option—

(1) either of receiving at once the difference between the absentee allowances they actually received during the first six months of such leave and six months' allowances calculated at the rate of Rs. 600 a-month, or where their full pay and allowances prior to going on such leave were less than 600 rupees a-month, then the difference between such full pay and allowances and what they actually drew during the first six months of their absence.

(2) or of waiting to take six months' special leave on 600 rupees a-month, or on full pay and allowances when these are less than 600 rupees a-month, before the end of 1880. It must be clearly understood that in the latter alternative the leave will be taken subject to the conditions laid down by the Government of India in their Resolution of 26th March 1879, No. 1,453.*

*1. That the term "full pay and allowances" means the full pay and allowances which the officer to whom special leave is granted is in receipt of when he avails himself of the leave.

2. That the special leave will *not* count as service.

3. That the special leave *will* interfere with other leave. For instance, an officer who takes the special leave will forfeit all claim to privilege leave which is due to him when he takes the special leave, nor will an officer, under the operation of Section 35 of the Civil Leave Code, be entitled to take any other leave at the close of the special leave.

The concession intended by the special leave is the grant of extra leave allowance during the first six months of an officer's absence. After the end of the six months, that is, for the remainder of his leave, the officer draws the usual leave allowance under the rules to which he is subject.

2. The total amount of money disbursed under the authority of the above Order will be duly reported by the Accountant-General for communication to the Government of India.

3. The Government propose to grant twelve months' extra service for pension to all the officers and subordinates whose names appear in list No. 2. The Government of India will be informed accordingly.

(True Extract.)

(Signed) J. H. GARSTIN,
Acting Secretary to Government.

To the Financial Department,
,, the Military do.
,, the Public Works do.
,, the Surgeon-General, Indian Medical Department,
,, the Board of Revenue.
} with lists Nos. 1 and 2 for communication to the officers and subordinates concerned.
,, the Accountant-General, for information and guidance, with lists Nos. 1 and 2.

Exd. J. W. Fischer.

1-11-79

Govt. of {1879} Madras

REVENUE.

To

THE FINANCIAL DEPARTMENT,

&c., &c., &c.

Dated October 10th.

Printed 16th.

Read.

Encl.

B No 2840 W dy 10/11/79.

Communicated to the Examiner Public Works Accounts

Instd J.P. 7-11-79.

Exr. Pub Accts
Supdg Engineers

Desp
66 68

G.O., 10th *October* 1879, *No.* 2,033.

FAMINE RELIEF.

OCTOBER.

Nos. 145-146.

Officers employed on Famine Relief Duty in 1876-77.—Passing orders on letter from the Government of India sanctioning the grant of certain concessions to —.

P. W. Department
Govt. of the Madras Govt
Read the following:-

GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

5th October 1881, No. 1350.

Famine Services.

Read the following papers:—

Extract from the Review of the Madras Famine, 1876—1878.

In conclusion, His Grace the Governor in Council desires to place on record his high estimation of the services of the officers of all branches of the administration during the late famine. The great burden of the task of confronting it, with all its concurrent liability, fell naturally on the executive officers of the Revenue, Public Works, and Medical Departments, and His Grace in Council hereby tenders to all the officers of those departments who took any part in the famine operations his hearty thanks for the zeal and devotion they exhibited in the discharge of their onerous and often painful duties. As officers of those departments whose services were specially valuable, and to whom the Madras Government is under the deepest obligations, His Grace in Council selects the following:—

In the Revenue Department.	In the Public Works Department.	In the Medical Department.
Mr. A. Wedderburn.	Lieut.-Col. H. L. Prendergast, R.E.	Surgeon-General G. Smith.
The Hon. D. Arbuthnott.	Lieut.-Col. J. O. Hasted, R.E.	Surgeon-Major W. R. Cornish, C.I.E.
Mr. G. Thornhill, C.S.I.	Major K. A. Jopp, R.E. (Bombay).	„ C. Robertson.
„ R. K. Puckle.	Major J. Pennycuick, R.E.	„ Æ. M. Ross.
„ J. H. Master.	Mr. J. O'Shaughnessy.	„ D. R. Thompson, C.I.E.
„ R. Davidson, C.S.I.	Major S. C. Clarke, R.E.	Surgeon J. F. Fitzpatrick.
„ C. T. Longley.	Captain Awdry, R.E.	„ J. Backhouse.
„ W. S. Whiteside.	Mr. W. B. Christie (P.W.D., Bengal).	„ C. MacNally.
„ R. W. Barlow.	Mr. J. F. Maxwell (P.W.D., Bengal).	„ A. N. Rogers Harrison.
„ W. MacQuhae.	Lieutenant Baddeley, R.E.	„ L. Beech.
„ J. Grose.	„ deVillamil, R.E.	„ J. Lancaster.
„ J. F. Price.	„ Henderson, R.E.	„ W. G. King.
„ H. J. Stokes.	„ S. C. Plummer.	„ W. O'Hara.
„ C. S. Crole.	Mr. G. W. Allen (P.W.D., Bengal).	„ J. Sturmer.
„ C. W. W. Martin.	Mr. J. D. Davies (P.W.D., N. W. P).	„ B. H. Williams.
„ G. McWatters.	Mr. A. S. Russell.	
„ H. F. Clogstoun.	„ G. A. G. Shawe (P.W.D., Bengal).	
„ E. Turner.	Mr. J. Traill.	
„ E. Gibson.		
„ C. F. MacCartie.		
„ R. S. Benson.		
„ H. T. Ross.		

There were also several officers of other departments, such as the Revenue Settlement and Survey, who were employed on active famine relief duties, owing to

their own departmental duties being at a standstill, who have deserved equally well of the Government, and to whom His Grace desires to extend the same expression of high approval. These are—

Revenue Settlement.

Mr. J. H. M. Cox.
„ G. P. Clerk.

Revenue Survey.

Major C. D. Baynes.
„ C. A. Liardet.
Mr. J. H. Cook.

Nor does His Grace in Council overlook the excellent services of the Police Force throughout the Presidency and particularly in the Town of Madras itself. Onerous and harassing as their duties are at all times they were rendered doubly so by the nature of the additional ones thrown upon them by the circumstances of the famine which were cheerfully and efficiently discharged. As deserving special commendation His Grace in Council selects the following officers:—

Colonel Drever, C.S.I., Officiating Inspector-General of Police.
Major Balmer.
„ Hicks.
Captain D. Heming.
„ Wilton.
„ Harris.
„ R. Wilson, Madras Army, } In charge of Relief Camps under the Inspector-General at Madras.
„ Scott, Her Majesty's 48th foot, }

To the District Judges and their subordinate judicial officers and to those independent gentlemen throughout the famine districts and in Madras who devoted their leisure time and energies to the distribution of the Mansion House and other privately subscribed funds, the Government desire to tender their best thanks for the valuable services rendered at a period when, but for such aid, the splendid generosity of England and her colonies might have failed to reach those for whom it was intended, or have reached them when it was too late.

Mr. A. Weekes, B.C.S.
„ W. A. Howe, B.C.S.
„ W. B. Oldham, B.C.S.
„ H. M. Kisch, B.C.S.
„ A. W. Mackie, B.C.S.
„ E. J. Kitts, B.C.S.
„ H. Gillon, B.C.S.
„ F. H. B. Skrine, B.C.S.
„ H. Shaw, Deputy Collector, N. W. P.
„ H. L. F. Tonnere, Bengal Police.
„ Innes, Opium Department, Bengal.
„ Graham, Bengal Police.

The warmest thanks of the Madras Government are also due to those Civil Officers from other provinces whose services were placed at the disposal of the Madras Government from time to time for famine relief duty. Pre-eminent among these are the gentlemen noted in the margin, who, arriving at an early period of the famine, rendered admirable service during a period, in some instances, of more than eighteen months.

To the Consulting Engineer for Railways and his staff and to the administrative officers of the Madras and South Indian Railway Companies marginally noted the Government desire to express their high appreciation of the excellent manner in which, during the height of the famine pressure, the Railways were worked, enabling an enormous supply of grain to be thrown into the distressed districts, without which aid it is almost certain that the mortality from starvation must have been far more terrible than it was. To many private individuals also the thanks of Government are due for their labors in the cause of humanity during the time that the famine was at its worst. Chief among these are those benevolent ladies of Madras who organised *crêches* throughout the city where crowds of starving children were daily fed and rescued from death; and the gentlemen noted below.

Colonel Shaw-Stewart, R.E.
Major C. J. Smith, R.E.
„ Coaker, R.E.
Mr. R. B. Elwin, late Agent for the Madras Railway Company.
Mr. H. E. Church, Traffic Manager for the Madras Railway Company.
Mr. F. H. Trevithick, Locomotive Superintendent for the Madras Railway Company.
Mr. W. S Betts, Agent, South Indian Railway Company.
Mr. F. Stanton, Traffic Manager, South Indian Railway Company.

Mr. J. Macartney, Agent to the Rajah of Sandur.
The Rev. J. Thomas, St. Thomas' Mount.
„ Rev. A. Margoschis, Tinnevelly.
Dr. Chester, Dindigul.
M.R.Ry. P. Ramasami Mudaliar of Madras.
M.R.Ry. A. Kumarasami Mudali, } of Bellary, who opened a native orphanage.
M.R.Ry. A. Sabapathi Mudali, }
Sanjiva Reddi of Johavapuram,
Timma Reddi of Guntakal,
Subba Reddi of Jutur,
Kesava Reddi of Kallumadi,
Yenni Sinappa, } of Hospet,
Yenni Kistnappa, }
} in the Bellary District, who relieved the poor of their own villages at their own expense.

Lastly, the Governor in Council desires to pay his sorrowing tribute to the memory of those Government officers and volunteers who lost their lives in the discharge of their famine relief duties. These were—

Mr. E. L. Bamfield, Punjab Police.
„ G. P. Rae, Bengal Police.
„ E. de Grousilliers, Executive Engineer, 2nd Grade.
„ C. V. S. Cotton, Assistant Engineer, 2nd Grade.
„ J. Caldwell, Supervisor, 1st Grade.
Serjeant D. Haining, Overseer, 1st Grade.
Mr W. A. Conroy, Sub-Engineer, 3rd Grade.
„ W. H. Stokoe, Supervisor, 2nd Grade.
Muzaffar Hussain, 3rd Class Hospital Assistant.

Volunteers.

Mr. Ernest Mason.
„ W. Coombes.
„ W. Chapman.

Messrs. Bamfield, Rae, and Cotton were all young officers of great promise, and His Grace in Council trusts it may be some consolation to their relatives to know that the manner in which they discharged their duties to the last was fully appreciated by the Madras Government.

From Lieutenant-Colonel T. E. TENNANT, Inspector-General of Jails, to the Chief Secretary to Government, dated Ootacamund, 22nd September 1881, *No.* 181 [*Current No.* 1996].

Received in September 1881.

In the Review of the Madras Famine, 1876—1878, His Grace the Governor in Council has been pleased to place on record his high estimation of the services of the officers employed on relief duties during the late famine. In this report every branch of the administration that took any part in the famine operations is mentioned with the exception of the Jail Department, although Government in reviewing the Jail Administration Report for 1877 were graciously pleased to acknowledge the zeal and vigilance shown by the department during this unprecedentedly trying time.

G.O., 12th September 1878, No. 1865.

2. Believing the omission to be an oversight, I venture to bring to the notice of Government the excellent and praiseworthy manner in which the officers of the Prison Department conducted their onerous duties, as I consider myself justified in believing that the success which attended the efforts to preserve life and to maintain discipline is due to the continued vigilance and discretion exercised by the staffs of the various prisons.

3. Without any desire to exaggerate the difficulties attendant upon the management and control of so large and sudden an increase to the numbers in confinement, I must record in justice to the Superintendents of Jails and to the establishments as a whole, that they went cheerfully through much anxiety and hard work in preserving discipline and in securing proper sanitation amongst the crowds of wretched creatures

passed into the jails. The ordinary gradual influx and release of prisoners causes little disturbance in the economy of a jail, but when it happens that gangs of half-famished people crowd into jail and thousands of men and women are sent to prison after passing through every stage of privation and degradation, utterly broken in health and callous of preserving even the common decency and propriety of life, the task of preserving discipline, order, and cleanliness becomes one of great difficulty.

4. Upwards of 200,000 persons passed through the jails during the famine period; I scarcely need state that every jail was more or less crowded. The excess numbers were accommodated in large temporary jails in which the sanitary arrangements were as perfect as circumstances would admit. In fact they were model relief camps in which the inmates were perhaps better cared for than the crowds of wretched creatures who did not seek these harbours of refuge. There was no slight difficulty in making arrangements for feeding and clothing the enormous numbers who crowded into these jails. Nevertheless the food-supply never failed, and in one instance only did the Superintendent seek for the assistance of Government.

1877	
1878	85,044
1879	69,772
	48,749
Total ..	203,565

5. Early in the month of September 1876 the late Mr. Robert Ellis wrote as follows: "There is every probability of your jails in Kurnool, Cuddapah, and Bellary, and later in Nellore and North Arcot, becoming exceedingly overcrowded; no time should be lost in preparing for this emergency, and you have before you a time of trouble and crime due to want and distress." I at once visited the districts and made timely arrangements to meet the emergency, for example in the jail at Bellary, which has ordinary accommodation for 415 prisoners, the population rose to 3,000 prisoners, and the numbers in other jails rose in the same proportion. Temporary accommodation was prepared and contracts made for the supply of grain, so that when the railways became blocked with the enormous supplies of grain the jails had already obtained large stores before the intense famine pressure came. There was a very heavy mortality, specially from cholera and from diseases caused by inanition, but terrible as the mortality was, compared with the death-rate of the free population, it was not excessive nor as high as might have been expected, considering the ill-nourished and emaciated condition of the generality of the prisoners admitted. The tremendous strain of extra work thus thrown on the prison establishment was cheerfully borne. Virulent cholera broke out in several of the prisons, and the mortality was appalling. Nevertheless discipline was effectively maintained and the prison rules observed.

6. In conclusion, I believe that in no department of the State was there greater zeal and assiduity shown amongst the officers or a more satisfactory response to the demand for their continual vigilance and discretion than in the Prison Department. I beg permission to bring the services of the following officers prominently to the notice of Government:—

Major W. S. McLeod, Superintendent of the Central Jail, Vellore.
Mr. H. R Grimes, Superintendent of the Central and District Jails, Coimbatore.
Surgeon-Major G. S. W. Ogg, in Medical charge of ditto.
Surgeon-Major Æ. M. Ross, Superintendent, District Jail, Nellore.
Surgeon-Major C. Robertson, Superintendent, District Jail, Cuddalore (has received the thanks of His Grace the Governor in the Medical Department).
Lieutenant-Colonel R. A. Watters, Superintendent of the Central and District Jails, Trichinopoly (left the department).
Surgeon L. Beech, Superintendent, District Jail, Bellary (has received the thanks of His Grace the Governor in the Medical Department).

Amongst the subordinate officers deserving of special mention are—

W. H. Bradbury, Jailer, District Jail, Bellary.
J. Bullock, Jailer, Central and District Jails, Coimbatore.
W. North, Jailer, Central Jail, Salem.
C. Singaravelu, Hospital Assistant, Nellore (dead).

ORDER THEREON, 5th October 1881, No. 1350.

Communicated to all the Departments concerned in view to the thanks of Government being accepted by them and conveyed to those named.

2. The attention of the Governor in Council has been drawn to the fact that in the Review from which the foregoing extract is taken, the thanks of Government were accorded to Colonel Drever, C.S.I., as Acting Inspector-General of Police, he having been in charge of the department only from March 1878, to the date of his relief by Colonel Hearn, C.I.E., in November 1879.

3. Colonel Drever's excellent service was connected chiefly with the Town of Madras, where he held the appointment of Commissioner of Police.

4. The Government consider it due to Colonel Hearn, the Inspector-General of Police, to place on record the fact that he was in personal charge of the department from the commencement of the famine in 1876 until March 1878, when he returned to England in impaired health. The excessive strain on the department consequent upon the prevalence of violent crime and the necessity for raising extra forces and undertaking unusual duties was met by his very efficient arrangements, and the acknowledgments of Government are due to him for his able administration and untiring exertions during this prolonged period. When he took leave, the extreme pressure upon the Head of the Police Department was passing away, the famine being almost at an end.

5. The thanks of Government are also due to Lieutenant-Colonel Tennant, the Inspector-General of Jails, and to the following officers and subordinates who served under him during the famine for their exertions and excellent management:—

Major W. S. McLeod, Superintendent of the Central Jail, Vellore.
Mr. H. R. Grimes, Superintendent of the Central and District Jails, Coimbatore.
Surgeon-Major G. S. W. Ogg, in Medical charge of ditto.
Surgeon-Major Æ. M. Ross, Superintendent, District Jail, Nellore.
Surgeon-Major C. Robertson, Superintendent, District Jail, Cuddalore.
Lieutenant-Colonel R. A. Watters, Superintendent of the Central and District Jails, Trichinopoly.
Surgeon L. Beech, Superintendent, District Jail, Bellary.
Mr. W. H. Bradbury, Jailer, District Jail, Bellary.
Mr. J. Bullock, Jailer, Central and District Jails, Coimbatore.
Mr. W. North, Jailer, Central Jail, Salem.
C. Singaravelu, Hospital Assistant, Nellore.

(True Extract.)

R. DAVIDSON,
Chief Secretary.

To the Revenue Department,
" Military Department,
" Public Works Department,
" Board of Revenue,
" Collector of Bellary,
" do. Chingleput,
" do. Tinnevelly,
" do. Madura,
" Inspector-General of Police,
" do. Jails,
" Surgeon-General with the Government of Madras,
} and for communication to the officers concerned.

To M.R.Ry. P. Ramasami Mudaliar, Madras.
" the Collector of
" the District Judge of
} for information.

Exd. T. O'Connor.

8/11/97

Gobt. of (1881) Madras.

PUBLIC.

Order No. 2652 Dated 29 oct 1881
Communicated to officers of the P.W. Department named in the order; also to the Consty. Engr. for Railways for communication to the Railway officials concerned.
(True Extract)
(Sd) J. Pennycuick,
~~Lt~~ Major R.E.,
Under Secretary.

To

THE REVENUE DEPARTMENT,
&c., &c., &c.

Dated October, 5th.

Issued

Read.

Encl.

G.O., 5th October 1881, No. 1350.

To

Col. J Shaw Stewart RE
" H.L. Pendergast RE
Lt Col. J.O. Hasted RE
Major C.J. Smith RE
Major J. Pennycuick RE
Capt. S.C. Clarke RE
Capt. A Awdry RE
" W.H. Crooker RE
Lieut C.B. Henderson RE
" W.L.C. Baddeley RE
" S.C. Plummer
Mr A.S. Russell
" J Trail
Consty Engr. for Railways.

OCTOBER.

Famine Services.—The thanks of Government conveyed to certain officers for the services rendered by them during the late famine.

0255-3/1881

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

No. 11.

READ—the following letter from E. C. BUCK, Esq., C.S., Secretary to the Government of India, Revenue and Agricultural Department (Famine), to the Secretary to the Government of Madras, dated Calcutta, 13th February 1883, No. 15 F.:—

I am directed to acknowledge the receipt of your endorsement, No. 3033 W., dated the 15th November last, submitting a list of officers and non-commissioned officers of the Royal Engineers employed on famine duties in Madras during 1877—79, who would appear to be entitled to the concessions sanctioned by the Secretary of State in his despatch, No. 433 (Military), of the 22nd December 1881. In submitting this list the Madras Government expresses a doubt as to whether the concessions allowed by the Secretary of State are intended by the Government of India to be restricted in the manner indicated in the letter from the Government of India to the Government of Bombay, No. 4[illegible] F., dated the 30th May last. With reference thereto, I am to say that the restrictions laid down in the letter above quoted have not been removed, and they have been strictly applied in disposing of all such references as that under consideration

2. In examining the list submitted, it has been noticed that there are some officers and non-commissioned officers mentioned therein who have already received the benefit of one or other of the concessions sanctioned in Finance Department Resolution, No. 2087, of the 10th August 1878, and others who have been granted the concessions sanctioned in the Secretary of State's despatch of the 22nd December 1881, thus:—

(i)—Major K. A. Jopp,
Lieutenant R. deVillamil,
Sergeant C. Hilton,
have already received the benefit of the first of the concessions sanctioned under Finance Department Resolution, No. 2087, of the 10th August 1878.

(ii)—Lieutenant C. B. Henderson,
" O. V. Boddy,
" W. L. C. Baddeley,
Sergeant W. Frankland,
have received the second of the concessions sanctioned under Finance Department Resolution, No. 2087, of the 10th August 1878.

(iii)—Sergeant F. Heinig,
Corporal Curtis,
have received the concession granted in the Secretary of State's despatch, No. 433, dated 22nd December 1881. Their cases were submitted by the Resident in Mysore, to whom sanction was directly communicated.

(iv)—There remain then the following officers who have not received either of the two concessions sanctioned in Finance Department Resolution, No. 2087, of the 10th August 1878, or that sanctioned in the Secretary of State's despatch, No. 433 (Military), of the 22nd December 1881 :—

Major S. C. Clarke.
Lieutenant R. E. Hamilton.
" P. B. Baldwin.
Lieut.-Colonel P. P. L. O'Connell.
Lieutenant A. C. Foley.
" M. Martin.
" S. C. Grant.
Corporal W. Terry.
Sergeant T. Green.
Lieutenant S. S. Saunders.
Sergeant W. Beevers.
" G. Anderton.
Corporal J. Ranson.
Corporal A. Deane.
" W. Basset (dead).
" J. F. Knight (dead).
" W. Rawlins.
Sergeant T. W. Jenner.
" G. Balding.
" J. Bishop (dead).
" W. McCormac.
" Price.
Corporal Tizzard.
" Rundall.
" A. Baily (dead).

3. The officers mentioned under (i), having already obtained the first of the famine concessions under the Resolution of the 10th August 1878, are not entitled to the alternative concession sanctioned in the Secretary of State's despatch of the 22nd December 1881, as this was granted in lieu only of the second of the original concessions. Under the Resolution of 1878, an officer had a claim to *one* of two concessions: if he obtained the first, he was ineligible to the second. The subsequent orders of 1881 did not therefore apply to those officers and non-commissioned officers of the Royal Engineers who had already availed themselves of the first concession.

4. As regards the officers mentioned in list (ii) of paragraph 2 of this letter, as having already obtained the second of the original concessions, they of course may be admitted to the alternative concession sanctioned by the Secretary of State, as that originally granted to them has availed them nothing.

5. As regards the officers mentioned in list (iv) of paragraph 2, I am to point out that the conditions entitling an officer or a non-commissioned officer of the Royal Engineers to the concession sanctioned in the Secretary of State's despatch of the 22nd December 1881 are—

(*a*) that he must be specially deserving;
(*b*) that he did not draw a salary in excess of Rs. 600 per mensem while on famine duty;
(*c*) that he drew no extra allowance while so employed.

Among those mentioned in list (iv) Major Clarke and Lieutenant-Colonel O'Connell drew salaries in excess of Rs. 600 per mensem while on famine duty, and Lieutenants Foley, Martin and Saunders and Sergeant Beevers drew extra allowance while so employed. These officers are consequently not entitled to the concessions sanctioned by the Secretary of State. As regards the remaining officers and non-commissioned officers, whose names appear under (iv), I am to communicate the sanction of the Government of India to the grant to them of the concessions sanctioned by the Secretary of State in his despatch, No. 433 (Military), of the 22nd December 1881. As four of the non-commissioned officers mentioned therein are dead, it was hardly necessary to have included their names in the list.

Mis. No. 819, Revenue.

Transferred, with the spare copies received, to the Public Works Department.

Fort St George,
23rd February 1883.

(Signed) P. P. HUTCHINS,
Ag. Secretary to Government.

No. 12.

Order—dated 3rd March 1883, No. 690 W., Public Works.

Communicated to the officers concerned for information in continuation of G.O., No. 3032 W., dated 15th November 1882.

2. The Examiner, Public Works Accounts, is authorized to disburse the bonus of three months' pay to those non-commissioned officers now declared to be entitled to it under the terms of the Secretary of State's despatch, No. 433, dated 22nd December 1881, and to note the names of those officers who are now admitted to the concession of special service for furlough.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To Superintending Engineers.
" the General Superintendent, Public Works Stores.
" the Examiner, Public Works Accounts.
" the Military Department.

Exd. A. F. Goodall.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated March, 3rd.

Recd.

Encl.

G.O., 3rd March 1883, No. 690 W.

MARCH.
Nos. 11-12.

Famine Concessions

The grant of the — to certain Royal Engineer officers and non-commissioned officers, ordered.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers :—

From T. W. HOLDERNESS, Esq., C.S., Officiating Secretary to the Government of India, Revenue and Agricultural Department (Famine), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 21st June 1883, No. 98/5-10 F.

With reference to the Despatch from the Secretary of State, No. 433 (Military), dated the 22nd December 1881, granting certain concessions to Officers and Non-Commissioned Officers of the Royal Engineers for famine services during 1877—79, I am directed to forward two lists of the officers and men who have received the concessions in question, and to ask that they may be verified and completed where details may be wanting.

2. I am to ask that the lists may be returned to this department with as little delay as possible.

ENCLOSURES.

No. I.

LIST of Officers of the Royal Engineers who have been granted the concession sanctioned in the Despatch from the Secretary of State, No. 433 (Military), dated the 22nd December 1881.

Nature of Concession.—Allowed to count towards furlough a period of service, according to the time passed on famine duty, not exceeding one year, this concession being governed by the conditions laid down in Financial Resolution No. 1087, dated 10th August 1878.

MADRAS.

Names of Officers.	Designation.	Period allowed to count towards Furlough.	Sanctioning Authority.
		Y. M. D.	
Baddeley, W. L. C. ...	Lieutenant	0 8 5	Government of India letter, No. 15 F., dated 16th February 1883.
Baldwin, P. B. ...	Do.	...	
Boddy, O. V. ...	Do.	1 0 0	
Grant, S. C. ...	Do.	0 4 17	
Hamilton, R. E. ...	Do.	1 0 0	
Henderson, C. B. ...	Do.	1 0 0	

No. II.

List of Non-Commissioned Officers of the Royal Engineers who have been granted the concession sanctioned in the Despatch from the Secretary of State, No. 433 (Military), dated the 22nd December 1881.

Nature of Concession.—Bonus of three months' pay, this concession being governed by the conditions laid down in Financial Resolution No. 1087, dated 10th August 1878.

MADRAS.

Names.	Designation.	Amount of Bonus.	Sanctioning Authority.
		RS. A. P.	
Anderton, G. ...	Sergeant, Overseer ...	313 11 9	Government of India letter, No. 15 F., dated 13th February 1883.
Bailey, A. ...	Corporal, do. ...	273 10 9	
Basset, W. ...	Do. do. ...	305 11 9	
Balding, J. ...	Sergeant, do. ...	...	Claim not yet submitted.
Bishop, J. ...	Do. do. ...	...	Do. do.
Deane, A. ...	Corporal, do. ...	269 11 9	
Frankland, W. ...	Sergeant, do. ...	...	Claim not yet submitted.
Green, T. ...	Do. do. ...	377 5 3	
Jenner, T. W. ...	Do. do. ...	313 11 9	
Knight, J. F. ...	Corporal, do. ...	269 11 9	
McCormac, W. ...	Sergeant, do. ...	...	Claim not yet submitted.
Price ...	Do. do. ...	305 11 9	
Ranson, J. ...	Corporal, do. ...	269 11 9	
Rawlins, W. ...	Do. do. ...	269 11 9	
Rundall ...	Do. do. ...	271 14 0	
Tizzard ...	Do. do. ...	...	Claim not yet submitted.
Terry, W. ...	Do. do. ...	...	Do. do.

No. 3689, Military.

Transferred to the Public Works Department with reference to G.O. in that department, No. 690 W., dated 3rd March 1883.

Ootacamund,
2nd July 1883.

(Signed) E. L. HANKIN, Colonel,
Secretary to Government.

Office Note from the Examiner, Public Works Accounts, dated 12th July 1883, No. 367.

Order—dated 19th July 1883, No. 1995 W., Public Works.

Ordered that corrected extracts of the lists, so far as the Madras Presidency is concerned, be furnished to the Government of India.

(Here enter No. 1996 W., dated 19th July 1883.)

(True Extract.)

(Signed) R. H. SANKEY, Major-General, R.E.,
Secretary to Govt., P.W.D.

To the Examiner, Public Works Accounts.
„ Military Department.

Endorsement—dated 19th July 1883, No. 1996 W., Public Works.

Copy of the above, with corrected extracts of the lists, forwarded to the Government of India, Revenue and Agricultural Department (Famine).

(Signed) R. H. SANKEY, Major-General, R.E.,
Secretary to Govt., P.W.D.

Exd. J. Henricus.
Spare Copies

1-11-97

GENERAL.
ESTABLISHMENT.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated July, 19th.

Recd. *Encl.*

G.O., 19th July 1883, No. 1996 W.

JULY.

Famine Concessions

FORWARDING extracts of the lists of Royal Engineer Officers and men to whom — were granted.

0155.5 / 6664/88

28TH MARCH 1888, No. 1005 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following paper:—

Resolution of the Government of India, Public Works Department (General), dated Calcutta, 14th March 1888, No. 613 G.

Date of commencement of Service in the Public Works Department of Subalterns of Royal Engineers appointed to the Department since 1872.

Read again—

Despatch No. 34 P.W., dated 23rd September 1886, from the Secretary of State for India.
Despatch No. 66 P.W., dated 31st October 1887, to the Secretary of State for India.

Read also—

Despatch No. 2 P.W., dated 19th January 1888, from the Secretary of State for India.

Resolution—

The present system of grading Subalterns of Royal Engineers on their first appointment to the Public Works Department with Civil Engineers has been under the consideration of the Secretary of State and the Government of India, in connection with the question of the establishment of Royal Engineers to be retained in India.

2. The conclusion arrived at is, that under the existing system young Royal Engineer officers, whose service in the department commences from the date on which they first join, are placed at a disadvantage in comparison with the Engineers appointed from the Royal Indian Engineering College at Coopers Hill, who count service in the department from the date on which they leave college, to go through a course of practical training, either in England or India.

3. After a full consideration of the relative ages at which the students of the Royal Indian Engineering College obtain their appointments and the Royal Engineers obtain their first commissions, it is considered that the two classes would be placed on an equality by allowing Royal Engineers who enter the department as Subalterns after more than two-and-a-half years' military service, to count their service in the department as commencing two-and-a-half years after the date of their first commission.

4. His Excellency the Governor-General in Council is therefore pleased to rule, with the concurrence of the Secretary of State, that Subalterns of Royal Engineers, appointed to the department subsequent to the year 1872, when Engineers from the Royal Indian Engineering College first entered the department, shall count their departmental service as commencing two-and-a-half years after date of first commission, unless the actual date at which they joined was earlier; provided that no officer shall add more than one year to his actual service in the department under this rule.

5. In publishing this decision, the Governor-General in Council desires it shall be recognised in the department generally that departmental seniority gives no absolute claim to promotion, since in the words of the Secretary of State's despatch of 19th January 1888, the principle on which advancement in the department is based, is selection for merit, the influence of seniority alone being of secondary importance in most cases.

11 This was not the case in 1874

The Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab.
,, Chief Commissioners of the Central Provinces, Burma (Upper and Lower), Assam and Coorg.
,, Resident at Hyderabad.
,, Agents to the Governor-General for Central India, Rajputana, and Beluchistan.
,, Accountant-General, Public Works Department.
,, Inspector-General of Military Works.
,, Director-General of Railways.
,, Consulting Engineers to the Government of India for Railways, Calcutta, Central Division and Lucknow.
,, Director-General of Telegraphs.
,, Director, Persian Telegraph.
,, Director, Persian Gulf Telegraph.
,, Superintendent of Works, Simla Imperial Circle.

Order—

Ordered that this Resolution be communicated to the Local Governments, Administrations and Officers noted on the margin, for information.

Ordered also that copy be forwarded to the Military Department.

(Signed) G. H. D. WALKER,
Under Secy. to the Govt. of India.

ORDER—dated 28th March 1888, No. 1005 W., Public Works.

Communicated to Superintending Engineers and to the Examiner, Public Works Accounts.

2. The names of officers affected by the present ruling are given in the attached statement. The dates in column 4 will be entered in future classified lists as the dates of their appointment to the Public Works Department.

(True Extract.)

Captain, R.E.,
Under Secy. to Govt., P.W.D.

To Superintending Engineers.
To the Chief Engineer for Irrigation.
,, Consulting Engineer for Railways.
,, Consulting Architect to Government.
,, Examiner, Public Works Accounts.
,, Military Department.

Exd. J. Moses.
Spare Copies

ANNEXURE.

Name.	Date of first Commission.	Actual date of appointment to the Public Works Department.	Date of commencement of service in the Public Works Department under present order.
Boddy, O. V., Captain, R.E. ..	23rd July 1870 ..	1st April 1873 ..	23rd January 1873.
Henderson, C. B., Captain, R.E. ..	23rd ,, ,, ..	25th March ,, ..	23rd ,, ,,
Langley, L., Captain, R.E.	23rd ,, ,, ..	1st April ,, ..	23rd ,, ,,
Baddeley, W. L. C., Captain, R.E. ..	15th December 1871 ..	23rd July 1875 ..	23rd July 1874.
Lindley, W. D., Captain, R.E. ..	9th January 1873 ..	23rd February 1885 ..	23rd February 1884.

GENERAL.
ESTABLISHMENT.

Govt. of {1888} Madras.

PUBLIC WORKS.

Dated March, 28th.

Recd. *Encl.*

G.O., 28th Mar. 1888, No. 1005 W.

MARCH.

Royal Engineers

Resolution of the Government of India forwarding instructions as to the manner of reckoning the date of commencement of service in the Public Works Department of Subalterns of — appointed to the department since 1872, communicated to Superintending Engineers and the Examiner, Public Works Accounts, with remarks.

IRRIGATION.

Government {1896} of Madras.

PUBLIC WORKS.

Recd. } 1896. *Enclosures*

Regd. *Spare copies*

G.O., Nos. 999, 1000 I., 27th November 1896.

NOVEMBER.

Floods in the Kistna

Forwarding Proceedings recording a further report from the Superintending Engineer on the recent —, noticing with satisfaction the excellent work done by the Executive Engineer and the subordinates named by the Chief Engineer for Irrigation, and stating that His Excellency in Council has pleasure in recording his approval of the unremitting and well-directed exertions of the Superintending Engineer Major Baddeley.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers:—

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezwada, 5th October 1896, No. 1826 K.

In continuation of my No. 1244 K., dated 13th August 1896, I have the honour to forward the detailed reports of the three Kistna Divisional officers upon the recent floods in the Kistna river.

2. Mr. Keeling, the Executive Engineer, Kistna Northern Division, sends with his report six tracings and a copy of the water register on both sides of the river, and with regard to the latter some explanation may be advisable as the datums for the gauge readings vary.

3. The readings in the columns "above" and "below" "anicut" refer to the datum of 23 feet below the crest of the anicut and, therefore, in order to ascertain the depth of the water on the crest, 23 has to be deducted from the reading given in the register. For example, the reading on the 6th August at 6 A.M. was 41·30 or 18·30 feet on the crest, and this is the highest reading ever registered at Bezwada; the highest previously being 40·04 or 17·04 feet on the crest.

4. The Pagatur gauge, which is situated on the Kistna in the Kurnool district about 250 miles from Bezwada, has its own zero, unconnected with any Bezwada datum. The readings are sent by telegram to Bezwada every day during the irrigation season; and, during the floods, I arranged with the Executive Engineer, Kurnool district, that the telegrams should be sent three times a day, as it was important that we should have early intimation of rises in the river.

5. The readings "front" and "rear" "head sluice" are taken from gauges, the zero points on which correspond with the cills of the sluices.

6. Turning now to Mr. Keeling's report, which is very clear and complete, I have merely to remark that the work of raising the head works is in rapid progress, the flood banks are being raised and strengthened, the scour hole in the anicut, of which I enclose a tracing and photograph, has been filled with Portland cement concrete and arrangements are being made to carry out all work that is necessary to make the works secure against a similar flood. As the working season here is very short, only three months, March to May, it is necessary to collect materials in advance, and I trust that any action that I take in this direction may be approved. I shall take care that the expenditure is regularised as soon as possible, but the most important matter is to ensure that next year shall not find us unprepared, and there is no time to lose.

7. The question of the railway bridge must be dealt with separately. I could merely repeat what I have already said, but would add that the state of the river, now that the floods have subsided, clearly proves that it is silting up on both sides, and it is absolutely certain that this silting will continue, until the river, unable to discharge freely through the contracted channel, will rise, during floods, to a dangerous height above and below the anicut. We cannot raise our flood banks and head works indefinitely, probably the height now fixed upon for the latter, viz., + 72 M.S.L. (the crest of the anicut is + 49·25 M.S.L.) is the maximum without rebuilding and widening the bases, and as the M.F.L. this year was + 67·55 M.S.L., it is evident that there is not much margin to spare. I can only hope that this important question may not be put on one side until it is too late. A crore and a half of rupees in capital will be sunk in the Kistna system before it is complete, at least 600,000 acres will be irrigated, giving a revenue of 30 lakhs for water-rate alone, and a rise of a few feet above the recent flood level would have wiped out the greater part of the head works and main distributaries, paralyzing the irrigation of the district for years and involving enormous additional capital outlay. With these facts before us, it is, in my opinion, absolutely necessary to do all that we can to relieve the contraction of the river below the anicut, and the obvious and only remedy is to remove the left training bank further back and increase the water-way of the bridge. If the question is looked at merely from a railway point of view, the bridge will remain as it is. If it is a question of funds, I would recommend that the cost of lengthening the bridge should be debited to the Kistna system; a more unfair debit it is hard to conceive, but any thing is better than to court a disaster which would ruin one of the richest and most important districts in the South of India.

8. I must now make a few remarks on the report of Mr. Loam, the Kistna Eastern Division Executive Engineer. This officer had only recently joined and had no knowledge of the district; he was, however, most ably assisted by his two Sub-divisional officers, Mr. U. N. Joyce and Sergeant C. J. Smith, and he himself was very energetic and did remarkably good work in closing breaches and protecting works. With his report he sent some sketch plans and photographs, from which I have selected the following as being of interest in giving a general idea of the damage done:—

(1) Site plan of breach at 3/2 Kistna left bank showing the ring bund now in progress.

(2) Sketch survey of Kistna left flood bank showing sites of twelve breaches between 31/0 and 33/1 with the ring bunds in progress or completed.

(3) Survey of breach in the Bandur canal between 27/7 and 28/0.

(4) Sketch-map showing the country flooded in the Kistna Eastern delta.

(5) Four photographs, the subject of each being entered on the back.

It will be observed that nearly the whole of the island of Divi was flooded, and the damage done to the tanks has been great, but it is satisfactory to think that the deposit of silt over the island will render it even more fertile than it now is.

9. The breaches in the Bandur canal have all been closed, the river bank work is in active progress, and I hope it will be found that the loss of crops has not been so great as estimated either on the main land or in Divi. A rather extensive programme of works is necessary to ensure the safety of the works in the Eastern Divison, where we are not only subject to damage from the Kistna, but also from the Budaméru, Ramiléru and Tammiléru, which cross the Ellore canal on their way to the Collair lake. I hope by the end of three years to have completed all works necessary for the Kistna Eastern Division, but, of course, this depends on funds being available.

10. Mr. L. D. Venkatarama Iyer, Assistant Engineer, was holding charge of the Kistna Western Division, as a temporary measure, owing to the sudden transfer of Mr. Malet, at the time of the floods, and I consider that he managed the division very well. A perusal of his report will show that the situation was an extremely trying one for a young officer. To the report I have nothing to add except that all repairs are being rapidly carried out and the necessary steps are being taken to prepare plans and estimates for strengthening and raising the flood bank on the right margin of the river.

11. I fear that the reports which I submit are in themselves somewhat long, and as there is nothing in them to induce me to modify the views I have expressed in my No. 1244 K., dated 13th August 1896, as to what should be done for the safety of the Kistna system, I beg to conclude my report by bringing to the notice of Government the general good work done by the members of the Public Works Department serving under me during the floods. There was at no time any hitch or confusion; and an extremely trying time and much anxious work only served to make every one work well and willingly.

12. Among those deserving of special mention, I must include the names of Mr. Keeling, the Executive Engineer in charge of the Kistna Northern Division,

Mr. U. N. Joyce, Sub-Engineer in charge of the Northern Sub-division, Kistna Eastern Division, Sub-Conductor J. S. Joyce in charge of the Workshops, and Sergeant C. J. Smith in charge of the Southern Sub-division, Kistna Eastern Division. Mr. Keeling initiated the work of rescuing the inhabitants of the submerged villages, and, in this connection, I consider that Sub-Conductor Joyce deserves great credit for the skill he showed in taking the *Alexandra* across the river when the current above the anicut was about six miles an hour, and the vessel can only steam about seven under the most favourable circumstances. It was fortunate that the steamer was outside the lock at the time of the flood as I doubt if she could otherwise have gone to the relief of the villagers, and it is a question for the Revenue Department to consider how these villages should be dealt with in future floods, when it may not be possible for the Public Works Department to send a steamer across the river. The villages are mentioned in paragraph 4 of Mr. Keeling's report. Without the aid afforded by this department, several hundreds of people would have been drowned in these villages, and I would recommend that, when the river rises to some fixed level, which could be reported to the Revenue authorities in time for action to be taken, the villagers should be warned and, if possible, forced to seek shelter on higher ground before it is too late. There is no hardship involved in this, and if these or similar precautions are neglected there may be wholesale loss of life on some future occasion.

Throughout the flood Mr. Keeling worked day and night and I cannot too highly appreciate his services. All the upper subordinates mentioned by me did most excellent work, and Sergeant Smith, who was cut off entirely by the floods, displayed great energy and judgment in protecting the works under his charge; in my opinion he is a most useful sub-division officer and I shall be glad to see him promoted in the department.

ENCLOSURES.

From H. T. KEELING, Esq., Executive Engineer, Kistna Northern Division, to the Superintending Engineer, II Circle, dated 5th September 1896, No. 302 S.E.

I have the honour to make the following report on the recent flood.

2. To conform with your demi-official orders that I should be at head-quarters when any heavy flood occurred, I left instructions, when going into camp in July, that a telegram was to be sent to me when the river reached +35 on the Bezwada gauge, or if anything unusual happened. On the 30th, I received a telegram saying that the river was 35·2, I accordingly returned to Bezwada next day.

3. On my return the river was at 37·15, the telegram from Pagatur indicating that a further rise might be expected. The "planks" that had been prepared for the new head sluice vents at Seetanagaram were put in that water might be held up in the chamber between the old and new head sluices. The Executive Engineer, Kistna Western Division, was informed that water would have to be raised in the Main canal. The Executive Engineer, Kistna Eastern Division, was also informed that water might have to be raised in the eastern delta main canal to reduce the head on the sluices. The usual bunds were erected in the workshop yard, the workshop Superintendent vacated his quarters and the work of securing the timber and plant in the lower workshop yard was begun. The boat Superintendent was sent out to patrol the left flood bank with orders to strengthen all weak places.

4. On the 1st August, the river was still rising at Pagatur. I moved into camp at Seetanagaram to maintain a close watch personally on what I considered the weakest spot in the head works, viz., the Seetanagaram head sluices. On this day news was brought that the marinally-noted villages on the right bank above the anicut were submerged and in danger. The works being safe, I ordered the steamer across the river and made arrangements to go to their rescue. I informed Mr. Cumming, the Head Assistant Collector, of the state of the affairs and asked him to come, he being the nearest Revenue official. He came and a start was made at 4 P.M.; the steamer towing two cargo boats. The villagers at Undavally were safe on the hill, so they were passed by and we proceeded to Venkatayapalem. On reaching the village, one cargo boat with the Deputy Tahsildar entered the village at one end; the other boat went after five men on floats some distance from the village and then returned to collect people at the other end of the village. At 6 P.M., a start homewards was made with one boat, the other being left in the village. It got rapidly dark and the stream being strong, we were swept out of our course into a tree. I thought it too dangerous to proceed and so cast anchor. The other boat attempted to follow but was ordered to cast anchor and did so a short distance away. Every one spent an uncomfortable night without food. Next morning at dawn the first boat was taken to

Undavally.	Bodapalem.
Venkatayapalem.	Lingayapalem.
Kistnayapalem.	

Seetanagaram and the steamer returned for the second. In all 230 people were brought off. Mr. Cumming left at 9 A.M. on the 2nd for some villages down the Bandur canal. The steamer went out again at noon with the head-quarter Sub-divisional officer (Mr. G. R. Venkatarama Iyer) and Deputy Tahsildar. I also sent two cargo boats independently to Kistnayapalem to take villagers to Penumaka. On this day 87 people were brought to Seetanagaram and between 300 and 350 carried to Penumaka. On the 3rd, the Sub-Collector, Mr. Gillman, arrived and took charge of the operations, the head-quarter Sub-divisional officer accompanied him on the 3rd. Every assistance that was possible was given him (the Sub-Collector) in the way of men and boats, &c. On the 1st at Seetanagaram a rest camp was made of tents of tarpaulins and the new overseer's shed of the Kistna Western division was also used as a temporary shelter.

5. On the night of the 1st and 2nd, the stepped revetment in rear of the old Seetanagaram head sluice began to slip. It was in some places packed with half filled sand bags and in others wedged up temporarily with rubble. This revetment continued to slip daily and was eventually pulled down and has since been temporarily re-built in mortar to + 15 above sill level of the sluice. The cause of the slip was partly a leak round the left flank of the sluice and partly the commotion in the chamber, but mostly I think the former in the first instance.

6. Information of what was happening was sent to the Superintending Engineer by express and also by telegram.

7. Gunny bags were collected and filled at Seetanagaram to make protective bunds on the road, tram line and round the works.

8. Matters went smoothly at Bezwada until the night of the 3rd, when the head sluice began to leak from the regulating or upper platform on to the lower platform. The head was reduced after the Executive Engineer, Kistna Eastern Division, had been informed.

9. On the 4th, the Superintending Engineer arrived and visited the works with the undersigned. It was determined to load the Bezwada sluice with sand bags to try to reduce the vibration. The bags were also necessary to prevent the water washing up through the gratings for the sluice gearing and on to the bridge over the canal. The slope above the masonry and dry stone retaining walls below the under sluices was being eroded, this was revetted with sand bags and brushwood. The bund from the head sluice was continued eastwards along the top of this slope and was made of earth revetted with sand bags. Sand bags were placed on the parapets round the lock bungalow and the Bezwada lock. The lock was kept half full and the front gates temporarily raised.

10. At Seetanagaram a bund of sand bags was made against the front parapet wall of the head sluice and the sluice roadway was floored with bags to break the impact of the water on the roadway, if the sluice should be topped. The various smaller bunds were strengthened. The lock was kept half full and the front gates raised temporarily.

11. Work on the various bunds was carried on day and night and completed by the 6th. On the 5th the dry stone retaining wall in rear of the Bezwada under sluices sank and bulged at the site of the old drain.

12. The water in the main canal, eastern delta, was raised with the river to keep the head to 15 feet. On the 4th—fifth night—the head was reduced to as near 14 as could be maintained to assist in diminishing the vibration of the head sluice. The greatest depth at which the water stood in the main canal was 12·90 on the 16th.

13. The planks in the new head sluice at Seetanagaram enabled water to be held up in the chamber between the two sluices. 2·65 feet was thus held up and the maximum depth in the main canal was only 11·20. Had it not been for the new head sluice the depth would have been 13·85 feet. What the extent of the damage would have been had this been the case, it is impossible to say.

14. The left flood bank breached on the 6th, near 7/3 miles on the Hyderabad road. At this point the flood bank is about 200 yards from the road. The boat superintendent and coolies were at work at a low place close by when the bank suddenly sank and water poured over the country. The breach occurred at the same place as in 1882. The water took line of the old drainage channel to the Budameru. The Nizam's State Railway was breached in several places. The water spread over the valley beyond the line nearly as far as Kothur. It breached into the Rayanapad tank, destroyed the flood banks of the surplus channels from Elaprole, Pydurpad, and Rayanapad tanks. (These are three Imperial tanks.) The length of the flood bank breached is about 150 yards and it has been scoured out 10 feet deep. The Hyderabad road in rear of the breach has been practically wiped out for a length of a quarter mile.

15. The right flood bank was nearly breached, but, fortunately, it proved possible to prevent it by revetting the weak places with brushwood and sand bags.

16. As regards the head works no further injuries beyond those previously mentioned became evident during the floods. Since the water fell, the following injuries on the Bezwada works have become known (those previously mentioned are recapitulated).

(*a*) The bank between the nose wall of the lock entrance and the head sluice has been much scoured. It is proposed to put in a concrete toe behind sheet piling to revet the bank (1 foot 6 inches depth of stone and 1 foot 6 inches backing) and to point this with surki mortar up to + 68.

The leakage through the head sluice was due to the filling of the top 3 feet consisting of quarry rubbish only; it is proposed to fill this in with concrete.

The crack in the front arch of No. 14 vent of the under sluices has opened out; the rail beams and trolly for working the under sluice shutters have been damaged, the pointing and plastering have been knocked about a good deal and the rails, which were torn up from their fastenings, wore away two large stones on the rear face. The necessary repairs are in hand. The scour hole near the lower return of the under sluices on the anicut side has been much enlarged and has cut back towards the anicut body wall and under sluices. Nothing can be done here at present.* The slope above the masonry retaining wall was much eroded. Revetment, 15 inches deep with 15 inches back and slope 1 in 2, has been built here to repair the damages.

It will be necessary, I believe, to pull down and rebuild the dry stone retaining wall above the landing stage in one place where it has not only sunk but bulged below.

* Since writing this report, the scour hole has been ring bunded and the scour examined. The anicut has had a very narrow escape, the scour having cut back nearly to the body wall and right up to the main wall of the under sluices. The hole is being filled in with small stone at the bottom; then large jeddy stone packed to within 2 feet of the surface and the top 2 feet with Portland cement concrete. A drawing and photograph of the scour will be submitted in a few days.

17. In addition to the above repairs and protective works, it is proposed to raise the works on the Bezwada side to + 72.

18. So far as can be ascertained at present no damage has been done to the anicut and apron beyond the enlargement of the scour hole reported previously.

19. The eastern delta main canal and the head works of the Ellore, Ryves' and Bandar canals have large deposits of silt and sand. It is feared that dredging operations for the remainder of the season will be necessary in order to get the required quantity of water down the canals. The apron to Ryves' regulator was scoured to a depth varying from 2 to 6 feet. This has been temporarily repaired. It is proposed to build a curtain wall in rear during next closure and repack the apron.

20. It would be a great advantage were it possible to shut the Bezwada head sluices altogether during heavy floods. This might be done by providing Stoney's shutters at some suitable site to be hereafter fixed in the main canal to hold up, say, 16 feet of water.

21. On the Seetanagaram side the following injuries have become evident:—

The rough stone floor of the chamber between the two sluices has been scoured in several places causing both retaining walls to crack and the one on the right to move forward in a curve and tilt over. It is proposed to floor the chamber with cut stone, to rebuild the retaining walls to a height of + 15 above the floor, with a larger section and set back at an angle on a deeper concrete foundation. Temporary measures to last the season are being adopted to prevent further movement of the right retaining wall, viz., a rough stone toe with a concrete bag retaining wall to prevent further forward movement. The front returns of the lock have cracked and show a tendency to move forward. They have been temporarily shoved which has prevented further movement. It is proposed to make a concrete invert between the returns and to extend this concrete in front up to a row of sheet piles save 25 feet away and thus box in the foundations and prevent further movement.

It may, however, prove necessary to pull the returns down and rebuild after boxing in and levelling the foundations. It is thought that the cracks were due to unequal pressure and consequent sinking and tilting of the wells on which the work is said to be founded. The revetments in front of the lock have suffered considerably, a good deal of backing having been washed out. It is proposed to either close, grout the revetment with surki concrete or to rebuild it. A new pair of upper lock gates will be required for this lock, the heel posts being unsound. It is proposed to raise the works to correspond with the raising at Bezwada.

22. The maximum height to which the water rose was 41·30 on both the Seetanagaram and Bezwada gauges. Previously in 1882, the former registered ·66 more than the latter. The set of the river was as nearly as possible at right angles to the anicut.

Using the formula—

$$D = \angle \times c \sqrt{2g} \left[dd \sqrt{d + h} + \tfrac{2}{3} \{ (d + h)^{\frac{3}{2}} - h^{\frac{3}{2}} \} \right]$$

Were D = discharge.
" $\angle$ = length of the anicut.
" d = difference of water level above and below the anicut.
" dd = difference of water level below the anicut and the anicut crest.
" h = head due to velocity of approach.

I calculate the 1882 flood to have been 611,000 cubic feet per second and the recent flood 762,000 cubic feet per second, but in making the calculation for the 1882 flood I assumed the velocity of approach to be 8 feet per second only, and in the calculation for the recent flood I assumed 9 feet per second, this being the mean velocity at which I estimated the river to be flowing; assuming the estimated maximum of 890,000 cubic feet to be correct, there is at present an insufficient margin of safety before the works are topped.

Floods have a tendency to increase rather than decrease, and it is, therefore, proposed to raise the works to 72, the present level being 69·50.

23. A very large and important question is how the bridge below the anicut affects the safety of the head works on the Bezwada side and whether or not it raises the water level. The question is so large that I do not propose to touch on it further than to say that the greater portion of the water was discharged through spans 4, 5, 6, 7 and 8, and that large shoals have formed on both banks above the bridge. These shoals and the direction of the current are indicated on the tracing accompanying this report.

24. It is necessary to raise both flood banks above the anicut and to increase the section. Proposals in detail with estimates will be submitted later.

Roughly they will include raising to 6 feet above wave action in recent flood, increasing top width to 12 feet and the slopes to 1 in 2 and revetting the water face throughout the entire length of the bund. It is essential to ensure the safety of these bunds as both command railways, viz., the Nizam's line and the East Coast Railway on the left bank and the Southern Mahratta on the right.

The proposals made in this report were personally discussed with Superintending Engineer.

25. Accompanying the report are sketch plans showing the various important injuries and a copy of the water registers up to 9th August 1896.

26. The whole staff at head-quarters worked with the best will and results, and I beg to bring their services to your notice.

Water Register of Bezwada station from 29th July 1896 to 9th August 1896.

[*N.B.*—Zero on gauge is 23 feet below anicut crest.]

Month and date.	Time.	Anicut.		Head sluice.		Head.	Number of vents and height opened.		Under sluices.		Pagatur gauge.
							Breadth of vent, 6 feet.				
		Above.	Below.	Front.	Rear.		No.	Shutters.	Opened No.	Closed No.	
29th July 1896.	6 A.M.	32·65	28·90	17·90	9·25	8·65					
	Noon	33·25	29·70	18·50	9·25	9·25	15	2·33	11	4	36
	6 P.M.	33·85	30·70	19·10	9·25	9·85					
30th "	6 A.M.	35·05	32·60	20·30	9·25	11·05					
	Noon	35·65	33·40	20·90	9·25	11·65	15	2·65	11	4	40
	6 P.M.	36·05	33·90	21·30	9·50	11·80					
31st "	6 A.M.	36·85	35·00	22·10	9·50	12·60					
	Noon	37·15	35·40	22·40	9·80	12·60	15	2·63	11	4	43
	6 P.M.	37·40	35·70	22·65	9·80	12·85					
1st Aug. 1896.	6 A.M.	38·25	36·70	23·50	9·90	13·60					
	Noon	38·65	37·20	23·90	9·90	14·00	15	2·68	11	4	48
	6 P.M.	39·05	37·60	24·30	9·90	14·40					
2nd "	6 A.M.	39·55	38·40	24·80	9·90	14·90					
	Noon	39·75	38·40	25·00	9·90	15·10	15	2·60	11	4	49
	6 P.M.	39·75	38·50	25·00	10·00	15·00					
3rd "	6 A.M.	39·85	38·40	25·10	10·00	15·10					
	Noon	39·95	38·50	25·20	10·00	15·20	15	2·43	11	4	47
	6 P.M.	39·95	38·50	25·20	10·00	15·20					
4th "	6 A.M.	40·05	38·50	25·30	10 30	15·00					
	Noon	40·20	38·60	25·45	10·45	15·00	15	1·83	11	4	50
	6 P.M.	40·40	38·85	25·65	10·65	15·00					
5th "	6 A.M.	40·70	39·30	25·95	10·80	15·15					
	Noon	40·80	39·40	26·05	11·05	15·00	15	3·20	11	4	53
	6 P.M.	40·85	39·50	26·10	11·10	15·00					
6th "	6 A.M.	41·20	40·00	26·45	12·60	13·85					
	Noon	41·25	40·00	26·50	12·70	13·80	15	4·10	11	4	54
	6 P.M.	41·30	40·00	26·55	12·90	13·65					
7th "	6 A.M.	41·30	40·00	26·55	12·80	13·75					
	Noon	41·10	39·70	26·35	12·80	13·55	15	3·83	11	4	50
	6 P.M.	40·95	39 50	26·20	12·20	14·00					
8th "	6 A.M.	40·55	38 90	25·80	11·80	14·00					
	Noon	40·35	38·50	25·60	11·60	14·00	15	2·97	11	4	42
	6 P.M.	40·05	38·30	25·30	11·30	14·00					
9th "	6 A.M.	39·25	37·20	24·50	10·50	14·00					
	Noon	38·65	36·30	23·90	9·90	14·00	15	1·83	11	4	36
	6 P.M.	30·00	35·40	23·25	9·25	14·00					

9th August 1896.

(Signed) P. SESHAYYA,
Bezwada Lock Superintendent.

EXTRACT of Water Register of Anicut on Seetanagaram side from 29th July to 9th August 1896.

[*N.B.*—Zero on gauge is 23 feet below anicut crest.]

Month and date.	Time.	Anicut.		Old head sluice.		Head.	New head sluice rear.	Number of vents and height opened.		Number of under sluices opened.
		Above.	Below.	Front.	Rear.			Breadth of vents, 6 feet.		
								No.	Shutters.	
29th July 1896 ..	6 A.M. ..	32·25	28·20	18·50	8·00	10·50	..	15	1·80	11
	Noon ..	32·85	29·10	19·10	8·00	11·10	..	15	1·70	11
	6 P.M. ..	33·65	30·20	19·90	8·00	11·90	..	15	1·70	11
30th ,, ..	6 A.M. ..	35·05	31·50	21·30	8·00	13·30	..	15	1·60	11
	Noon ..	35·65	32·20	21·90	8·50	13·40	..	15	2·00	11
	6 P.M. ..	36·05	32·70	22·30	8·50	13·80	..	15	1·90	11
31st ,, ..	6 A.M. ..	36·85	33·70	23·10	8·50	14·60	..	15	1·90	11
	Noon ..	37·25	34·10	23·50	9·00	14·50	..	15	2·20	11
	6 P.M. ..	37·45	34·40	23·70	9·00	14·70	..	15	2·20	11
1st August 1896 ..	6 A.M. ..	38·15	35·20	24·40	9·70	14·70	..	15	2·60	11
	Noon ..	38·55	35·80	24·80	11·50	13·30	10·00	15	2·60	11
	6 P.M. ..	38·85	36·10	25·10	12·00	13·10	10·00	15	2·60	11
2nd ,, ..	6 A.M. ..	39·35	36·70	25·60	12·00	13·60	10·00	15	2·60	11
	Noon ..	39·55	37·00	25·80	12·00	13·80	10·00	15	2·60	11
	6 P.M. ..	39·55	37·00	25·80	12·00	13·80	10·00	15	2·60	11
3rd ,, ..	6 A.M. ..	39·65	36·90	25·90	12·00	13·90	10·00	15	2·60	11
	Noon ..	39·70	37·00	25·95	12·00	13·95	10·00	15	2·60	11
	6 P.M. ..	39·70	37·00	25·95	12·00	13·95	10·00	15	2·60	11
4th ,, ..	6 A.M. ..	39·85	37·20	26·10	12·00	14·10	10·00	15	2·60	11
	Noon ..	39·95	37·40	26·20	12·40	13·80	10·10	15	2·60	11
	6 P.M. ..	40·15	37·60	26·40	12·50	13·90	10·20	15	2·60	11
5th ,, ..	6 A.M. ..	40·50	38·00	26·75	12·60	14·15	10·30	15	2·60	11
	Noon ..	40·65	38·20	26·90	12·80	14·10	10·40	15	2·80	11
	6 P.M. ..	40·85	38·40	27·10	13·30	13·80	10 70	15	3·00	11
6th ,, ..	6 A.M. ..	41·15	38·60	27·40	13·30	14·10	11·00	15	3·00	11
	Noon ..	41·25	38·70	27·50	13·40	14·10	11·00	15	3·00	11
	6 P.M. ..	*41·30	*38·70	27·55	13·70	13·85	11·20	15	3·10	11
7th ,, ..	6 A.M. ..	41·20	38·50	27·45	13·70	13·75	11·20	15	3·10	11
	Noon ..	41·00	38·30	27·25	13·30	13·95	11·00	15	2·90	11
	6 P.M. ..	40·85	38·20	27·10	13·30	13·80	10·90	15	2·90	11
8th ,, ..	6 A.M. ..	40·45	37·70	26·70	12·70	14·00	10·60	15	2·70	11
	Noon ..	40·20	37·50	26·45	12·45	14·00	10·50	15	2·60	11
	6 P.M. ..	39·85	37·20	26·10	12·20	13·90	10·30	15	2·50	11
9th ,, ..	6 A.M. ..	38·85	36·30	25·10	11·80	13·30	10·10	15	2·50	11
	Noon ..	38·25	35·50	24·50	11·30	13·20	10·00	15	2·30	11
	6 P.M. ..	37·65	34·80	23·90	10·90	13·00	9·80	15	2·10	11

* M.F.L.

9th August 1896.

(Signed) Ch. VENKATARAMIAH,
Anicut Superintendent.

Report on flood damages in the Kistna Eastern Division in August 1896.

River bank.—The river had been rising steadily on the 31st July; it overtopped the ring bund opposite an old breach at 3 miles 2 furlongs of the river bank. When this took place water came against the bank made up over the old scour hole, and began to bubble up in the bank canal bed which runs alongside the river bank, the bank collapsed at 2 A.M. on the 2nd August. I inspected at midday and had the banks on either side of the breach protected by floating groynes.

The river bank at Yanamalakuduru has two low places at village crossing which were being raised. From commencement up to 3 miles 2 furlongs, the bank is low, there being 1·5 feet only to spare above flood line and was protected by bushes and leaves from wave action.

Looking up the river from the breach site, it appeared as if the midstream of river from the railway bridge impinged on the flood bank at this point.

On 14th I again inspected breach when water had gone down and had a survey made. Length of breach 255 feet, a ring bund 1,650 feet long will be required owing to the large scour hole 30 feet deep and extending far into the outside lunka.

The bund will be placed within the river margin and be brought up to full height required, it will not be advisable to put a bund across the scour hole, as at a certain depth sand is exposed and a bund may be expected to collapse from water percolating under it.

Survey attached, No. 1. Cost of repairs, Rs. 10,560.
Photograph No. 1.

No breaches occurred to river bank down to 31st mile. 2nd September, I inspected twelve breaches on river bank from 31/1 to 33/0 miles.

	Miles.	Feet long.
First breach	31/1	180
Second ,, ...	31/1	260
Third ,, ...	31/1	200
Fourth ,, ...	31/1	220
Fifth ,, ...	31/1	420

A diversion to ring bund was started on the 20th August.

	Miles.	Feet long.	
Sixth breach	31/6	100	Closed by a small ring bund.
Seventh ,, ...	31/6	56	No. 7 breach not scoured and closed; began 25th August.
Eighth ,, ...	31/6	130	
Ninth ,, ...	31/6	170	Being ring bunded; began 25th August. Already closed but being brought up to full section.
Tenth and eleventh breaches	31/6	420	
Twelfth breach	33	320	Ring bunded; began 15th August, finished 25th; distressed coolies were employed.

Survey showing all breaches, attached No. 2.

All above ring bunds are within the flood bank on land side, and will be brought up to full section; they will be practically diversions, as there is no lunka to spare on the river side.

The first breach occurred on 1st August, water went down from lunka. 13th, again water came through the breaches and went down from lunka on 23rd.

Flood water from these breaches flooded the most part of the Tsallapally zemindary and large amount of indian corn crop near maturity was destroyed; this is however being resown.

Coolies in adjacent villages were much distressed and are now being found work on the ring bunds. About 1,000 are now employed and paid every three days and executing a fair outturn of work; they will be kept on for the present; food-grain prices have risen, but not exorbitantly.

On *6th*, I inspected flood bank from 34th mile to 24th mile. Diversion in good progress; from 31st mile to 29th mile 4th furlong almost overtopped throughout; breaches would have occurred, but were saved by small turf bunds in several places especially at 29th mile 1st furlong at a ring bund. From 29th mile 4th furlong to 24th mile damaged by wave action. The bank has apparently been raised at random. In some places, it is now 6 feet above flood line; no work of sanctioned estimate for raising has been carried out in this portion.

7th.—Inspected from 24th mile to 21st mile 4th furlong; at 23rd mile 1st furlong only 50 feet of lunka left of 125 feet before the flood, proposed diversion of 6 furlongs must be put in hand at once; the estimate was put in recently. Contractors' coolies were camped at 22nd mile diversion which, though incomplete, has stood the flood owing to protection afforded by hurdles of bamboos, brushwood and rella grass; further work to complete was marked out, but is delayed by constant rain.

From end of new bank across this diversion to 21st mile 5th furlong the bank was overtopped in several places, but breaches were prevented by turf bunds. From 21st mile 5th furlong to 18th mile 5th furlong the bank was recently raised but has been damaged by floods. From 18th mile 5th furlong to 15th mile 4th furlong bank not yet raised and overtopped, breaches were stopped by timely precautions; 15th mile 4th furlong to 13th mile bank fully raised, but more or less damaged.

The sanctioned estimate for raising river bank will now be revised, the recent flood line will be marked on the sections and provision to raise the bank 6 feet above this will be allowed.

Divi Island—3rd September.—Right margin above rest-house badly eroded; survey is being prepared, protection work, if not undertaken by Conservancy sub-division, must at once be taken in hand by this division.

4th.—Inspected river bank from 1st mile 2nd furlong right bank to 3rd mile 4th furlong left bank, breaches in this portion were slight and have been closed. The river bank was almost overtopped throughout; pegs have been put in at maximum flood line and levels will be taken at an early date.

Remaining breaches were not inspected; sixteen breaches in left bank aggregating to 2,439 feet; all available labour is put on to repair it to prevent further damage in this monsoon. Cost of closing estimated Rs. 1,500 approximately.

Flood water within the flood banks was ·45 below top of basement of new cutcherry under construction at Avanigadda.

Flood right bank—Divi Island.—Inspected Kudi tank whole length of bund.

Breaches have all been closed and transplantation is in progress. Modumoody and two adjoining tanks have been filled.

5th September.—Inspected foreshore of river from 1st mile 2nd furlong to 6th mile 3rd furlong. A great deal of erosion has taken place here and there. Same measures must be taken as at Kottapatta where the groynes and rella have stopped erosion and caught silt.

Inspected bank from 6th mile 3rd furlong to 1st mile 2nd furlong and settled position of ring bunds around scours at head of supply channels to Modellar and Annantuni tanks. There are six breaches in left bank aggregating to 1,365 feet, will cost Rs. 1,000 to close. As far as can be ascertained the dry crops for first 5 miles from Avanigadda have not been damaged except indigo.

Of the 33 imperial tanks, 6 are full, 3 partly full and 24 badly breached and empty, will cost on an average Rs. 800 each, making a total of about Rs. 20,000.

Transplantation is going on under those containing water and seedlings on island being supplemented from main land.

The Paligadda branch of the Kistna river has been entirely cleared of rella grass and channel will soon he scoured out; several places in Divi Island will require protection by rella plantation.

Bandur Canal.—On the river rising and consequently the head sluice being raised to reduce head on the head works at Bezwada, the following steps were taken to get rid of the surplus water passed into first reach of Bandur canal.

Breaches were cut in right bank at 9 miles 3 furlongs and 9 miles 4 furlongs, also bund in front of Bank canal lock weir was cut. This latter relieved Bandur canal considerably, surplusing through Bank canal down into flooded country below breach in river bank; breaches were also cut at 12 mile 0 furlong in left bank and at 12 miles 2 furlongs in right bank down to 2 feet from berm level and section of bank reduced to take water, if necessary.

It may be well to note that at 9 miles 2 furlongs, the old Pulleru crossed the present Bandur canal from right to left and only at a high level would water run off through the breach and at 9 miles 3 furlongs, the old Pulleru crossed from left to right, at the high level reached in Bandur canal, both these breaches took water into low-lying lands below and across Valur zemindari channel that takes off above Kunkipad and then into flooded country along wet side channel.

Further, the recently raised masonry body walls of west side channel sluice were removed to platform level and Pulleru fully opened till 6·5 was the gauge reading in rear of head sluice.

When the Northern Sub-division officer was called to Bezwada to regulate Ellore canal escapes and there was a probability that head sluices at Bezwada would be raised still more to save the head works irrespective of what damages might result to the main canals, a bund was raised in front of Kunkipad lock and we were prepared to hold up 12 feet full supply being 8 feet. The gates are old and will not stand more than full supply. There is an old proposal to make the six vent-sluice built in continuation of the lock weir of Kunkipad (the body walls of which were built up to F.S.L. level), having only three tambogy vents to supply west side channel, into a permanent surplus work and to convert the present west side channel into a drain as far as Medur head sluice. This must now be investigated and if carried out, the spoil would form a strong right bank to Bandur canal and to the first two miles of Medur channel.

In the event of the head sluice at Bezwada being raised as in the present year, a large surplus work in the first reach is absolutely necessary. The irrigation question will be dealt with separately. Only 2,300 acres are involved, 1,000 can be commanded by Vallur channel but the whole of it, except about 300 acres can be cultivated dry.

Flood water from the breach at 3 miles 2 furlongs of the river bank breached Bandur canal second reach right bank from 15 miles 4 furlongs to 16 miles 6 furlongs and crossed the canal into the country beyond, this is the side of an old breach in times of heavy rain; in former days drainage passed under the canal through an old brick under-tunnel now blocked up and of too small a size to be of any good.

Below, a series of breaches occurred from 18 miles 6 furlongs to 19 miles 6 furlongs to both banks owing to their being low; these were widened by water flowing back into the canal. When this happened, canal from 15 miles 4 furlongs to 19 miles 6 furlongs was silted up between breaches two and a half feet.

Flood water also breached left bank in 21 miles 6 furlongs and a large scour hole formed 12 feet deep. To relieve water on left of canal and save masonry works, a cut was made at 21 miles 7 furlongs in right bank and at 0 mile, 6 furlongs of new Bheemanady channel into head of Bheemanady drain.

Medur and Bheemanady sluices were fully raised. These breaches were all ring bunded by the 19th August. I inspected this reach on 18th and 21st August. On the evening of the 20th flood water again rose and entered canal at ring bund from 16 miles 2 furlongs to 16 miles 4 furlongs and by midday of 21st August all ring bunds were again breached; these were again closed by the 1st September; on night of the 3rd ryots of Vallur cut a ring bund between 16 miles 2 furlongs and 16 miles 4 furlongs to drain their fields.

There is a certain old tank here which is usually cultivated, but in times of rain or flood holds up water and the ryots have cut the canal bank here before to drain it off. I inspected this reach on 8th September, banks are being strengthened and silt removed. In order to save Inampudy village, there being a difference of level of 4 feet 6 inches between water on left of canal and water on the right, cuts were made in the left bank. Bandur canal at 27 miles 1 furlong and right bank at 27 miles 3 furlongs being fairly high ground and plenty of earth being available to close them and a large volume of water was passed from left to right. Flood water on left of canal was at a maximum at 2 A.M. on 5th August, it was 3 inches above the parapet of the accommodation bridge over Kanakavalli drain at Inampudy.

The breaches caused by flood water between 27 miles 7 furlongs and 28 miles 0 furlong are 320 feet long in left bank; right bank 180; right bank of old west side channel 130 feet. This breach scoured out to depth varying from 2 feet to 12 feet below bed of canal, scour extending 520 feet outside right bank of old west side channel.

From 28 miles 2 furlongs to 29 miles both tanks of Bandur canal and right bank of Urutur left side channel washed away. Bed of canal being scoured out to depth, varying from 2 to 13 feet below bed in 5 places aggregating to 1,095 feet and extending in many places beyond right bank. Foundation of Urutur sluice undermined near left front return and sluices overturned. In this reach from 29 miles 0 furlong to 29 miles 4 furlongs both banks were damaged and overstopped, but not scoured, the left bank being washed into canal to one-fourth of this distance to level of berm. A very bad breach occurred at Urutur crossing of 290 feet long in left and 300 feet in right banks. The scour on either side of remnants of crossing varying from 5 feet to 13 feet 6 inches below bed of canal, about one-half of metalling was washed away. Between 29 miles 5 furlongs and junction canal, 31·2 water crossed. Canal from left to right causing a series of breaches but no appreciable scour.

Surveys Nos. 3, 4, 5, 6 show breaches with their mileage, ring bunds being devoted by red line.
Six photographs enclosed.
Photo attached.

Between the scour holes from 28·2 to 31·2 canal is silted up from 2 to 5 feet as water drained off this silt was used for reforming left bank.

Small bunds were formed across breaches in left bank for foot traffic by 20th August, but were three-fourths washed away by fresh flood on 21st and 22nd. No further damage was done to third reach except a small breach at site of old Butter codu head sluice which was promptly closed when flood water went down on first occasion.

Canal was bunded below 27·6 and punts were utilized in conveying materials from above Veeranki lock for closing breaches. Here I may remark that this damage in the third reach was entirely caused by water passing from left to right, held up by Pulleru and Junction canals, which would probably not have occurred, had there been a suitably designed drain in place of west side channel from Kunkipad lock to Mopedivi drain. Navigation was resumed on 20th September. The Delta Superintendent now in charge will resume his ordinary duties—distribution of water and patching up the channels.

Fifth Reach.—For about ten days water crossed canal from right to left damaged both banks in 49th mile but not scoured; breaches have all been closed, sufficient to hold F.S.L. in canal.

Third reach was cross bunded on 16th August immediately above Junction canal and navigation restored between Bandur and Pulleru on 22nd August by water being passed through valve shutters of Pamarru lock; on 5th instant box sluice was fixed in left bank at 32·2 and water passed into canal from east side channel to supplement supply through Pamarru lock and enable fields on right of canal to get a moderate supply of water through Duggumally and Manager codu and Mallavole sluices. Most of the channels under last two sluices were badly damaged. East side channel head sluice Polleru was fully opened until third reach was re-opened. Throughout the flood, water was supplied through Medur and Bheemanady channels, three-fourths of the land under these channels being undamaged, Medur channel was not appreciably damaged and out of its two branches. Kristnapatam branch was safe and Gudapad branch was submerged. The Bheemanady main channel was not damaged up to 10 miles, but so far as excavated below this was submerged. Of the branches fully excavated Krosur north and south branches were submerged and badly cut up. Kapileswarapuram channel on left of Bandur canal is the only Government channel in Southern sub-division; on this side above Pamarru was completely cut up, it held up flood water for a short time.

All breaches were patched up by 5th September sufficiently strong to let water down and transplantation is again vigorously in hand. On the 31st August I went to Lakshmipuram at 10th mile of Tsallapalli road from Tidal lock up the Sivaganga drain; then alongside flooded pits above road; crossed at 6 miles 4 furlongs at road dam; then along Dyapucalva, the road being still unpassable having been submerged and formation damaged.

The course of the Dyapucalva is most tortuous and undefined, if this were properly aligned and excavated with a suitable bed width and full, it would dispose of flood water far more rapidly than at present and save considerable damage. 1st September Lakshmipuram inspected. Lands damaged by floods, the village itself and surrounding fields are high and not damaged.

Pulleru Canal.—Pulleru canal breached in the portion between Kunkipad and Weyyeru from excess water passed down it during the floods from first reach Bandur canal, but of no importance.

Ryves' Canal.—Also Ryves' canal breached at 12 miles 2 furlongs from the same cause. This has been repaired. No damage has taken place in Kowtaram sub-division, but temporary inconvenience was caused by reduction of water in canals after flood.

Ellore Canal.—Ellore canal gave an anxious time when the river flood bank breached above Bezwada and the Budameru was consequently in flood.

In the third mile at the site of an old breach, the ring bund and the canal bank started leaking. Due to prompt action of Mr. Joyce the cracks were puddled and the bank protected

by bushes and raised; at this time, the Tammileru came down in flood, the fender pile bridge in front of escape collected an immence amount of debris, the water falling over this caused a scour round several fender piles; this portion must be floored next year, for which estimates and plans have been submitted.

Breaches occurred at $\frac{8}{3}$, $\frac{8}{5}$, $\frac{8}{7}$ on the right of Ellore canal 80 feet, 180 feet and 40 feet, respectively, in length. To save further damage the following cuts were made in 9/0 on the right 33 feet, 20 feet and 20 feet lengths respectively. All due to the flood waters entering the Ellore canal in the 7th mile and in addition to excess water from head sluices. Water from the Budameru passed 2 feet over the trough walls of Budameru aqueduct and one foot over Kesarapally aqueduct. A breach also occurred in the right bank at 10/6, also breach at 11/4 left bank, but this, it is suspected, was cut by the ryots under a mistaken idea of saving their village to let Budameru flood into the canal. The canal breached at 11/4 last year.

Old Kesarapally lock has been provided with moveable planks to hold up full supply and to turn it into an escape in times of flood instead of being cross bunded as formerly.

The following are the estimated amounts required for closing the breaches:—

Southern Sub-division.

	RS.
Masulipatam canal, second reach	10,000
Third reach including Urutur sluice and left side channel	20,700
Fourth reach	...
Fifth reach	1,550
Sea dyke	350
Kapileswarapuram channel	5,000
Bheemanady channel	1,375
Mallavolu left side channel	500
Medur channel	260
Manager codu, Nibhanipudi and Mallavolu channels	* 2,000
River bank, 13/1 to 29/4	* 7,000
Do. 29/4 to 44/4	* 15,000
Divi Island, right bank	1,000
Do. left bank	1,500
Divi tanks, 24	20,000
Total ...	86,235
or say ...	86,400

* Approximately.

Northern Sub-division.

	RS.
Removing and re-fixing towpath bridge, Tammileru escape ...	4,100
Closing breaches of Dosapad channel and branch	6,000
Closing breaches of north side channel, Lingavaram, south side channel	50
Closing breaches of Ellore canal	3,815
Do. of river bank	10,600
	24,565
or say ...	24,600
Total ...	1,11,000

It is estimated not more than 10,000 acres will be lost in the Eastern delta due to this flood, but where seedlings are available, transplantations is still going on and this figure may be capable of reduction. In Divi Island 9,984 acres are lost for this year and 4,933 will be cultivated.

From personal inspection I have seen that the prompt measures taken to minimise the damage and to remedy it when the floods went down adopted by the two Sub-division officers, Sub-Engineer Mr. U. N. Joyce in the Northern Sub-division and Sergeant C. J. Smith in the Southern Sub-division have been most effectual and satisfactory and deserve great credit.

In the anxious time when the floods were at their height great discomfort and hardship were experienced by all, but work was smartly and cheerfully done on all occasions.

The measures taken in the third reach of the Bandur canal by Sergeant Smith were on his own initiative and deserve praise; they were prompt and effective. I was unable to advise him not having seen the country, being new to the division.

With exception of Urutur sluice overturned which was unavoidable, no other damage took place to masonry works in the division.

Reports on the working of overseers and others under these Sub-division officers are submitted with this report. I fully endorse Sergeant Smith's recommendation.

(Signed) M. LOAM,
Ex. Engr., Kistna Eastern Divn.

From M.R.Ry. L. D. VENKATARAMA IYER, Assistant Engineer in charge, Kistna Western Division, to the Superintending Engineer, II Circle, dated 7th September 1896, No. 239 S.

In continuation of this office Nos. 189 S., dated 13th August 1896, and 206 S., dated 21st August 1896, I have the honour to submit the following detailed report on the damages done to the Western delta by the recent heavy floods of the Kistna river.

2. *Damages to works.*—These floods are higher than the hitherto-recorded maximum and consequently the flood bank proved to be not high enough to withstand the floods and breaches were inevitable.

3. The first reach of Bank canal has been saved with great care. The flood bank in this reach was generally not less than 2 feet above the recent flood-level except at sites of Donkas and isolated weak places. These places were all strengthened in time, keeping pace with the rise of the river and breaches have been prevented.

4. In the second and third reaches, the flood waters began to overflow the flood bank in long lengths of about half a mile and more (*i.e.*), below Kollur lock and near Penumudi. Below Kollur lock Overseer K. Sreenivasa Iyer tried his best to prevent breaches by raising a small bund and worked for two days—31st July and 1st August—with about 250 men. As there was no place near at hand to dig earth from, he was not able to keep pace with the rise of the river and the flood bank below Kollur lock breached on the night of the 1st August.

5. Overseer V. S. Rangasamy Iyer and Delta Superintendent B. Paparazu Pantulu worked hard in preventing breaches between Vellatur and Penumudi and by their works at least half a dozen breaches have been prevented. Judging by the protective works done all along below Vellatur, I consider that the Overseer and Delta Superintendent have done their best to prevent breaches. Near Voleru and Rani Ananthavaram, the bank was low for long lengths and consequently breaches could not be prevented. Those breaches occurred on the morning of the 1st August. The breaches at Pedda Pulivarru, two miles below Vellatur lock, seem to have been cut intentionally by the villagers, who thought that they could save their houses by cutting these breaches.

6. The breaches in the fourth reach occurred at the central ramp of Peratlanka where the bank and the ramp was left incomplete by contractor K. Purnanandam. This man's contract was cancelled on 31st May, but he was allowed to do the work on piece-work on the distinct understanding that he will still be held responsible for any damages that may occur on account of the non-fulfilment of the conditions of his contract. The flood bank in the fourth reach was from 3 to 4 feet above the recent flood-level, and, if the work had been completed, no damages would have occurred. Opposite these breaches in the flood bank, the right bank of Bank canal has also been breached mostly on purpose in order to save masonry works.

7. The flood waters that flowed over the country from the Kollur breaches, breached the Kollipara channel and its branches at the tail end and also the Vellatur channel. These, together with the flood waters from the Pedda Pulivarru breaches, breached the spoil bank of the new Repalle main drain, straight cut at Nagaram, and also the old straight cut at Pudivada and the banks of the east side channel extension and got into Peddapallivada.

8. The flood waters from Penumudi and Voleru breaches breached the Repalle channel and branches and the Iskapalli channel and branches, passed through Alaparru parra and thence into the salt creek and reached Nizampatam vada. A portion of Nizampatam was under 3 feet of water. These waters backed up on the left of Nizampatam canal and breached the fourth reach and also the good water channel.

9. The details of the damages done to the flood bank, Bank canal, and the Iskapalli channel are given in the statement appended. I have not gone in for similar details for the Vellatur and Repalle channels, the east side channel extension and the good water channel, as that will only delay the submission of my report. As already stated in my previous report there are eleven breaches to the left bank and seven to the right bank in the fourth reach of Nizampatam canal. All the masonry works on the canals and distributaries are safe with a solitary exception of a small old road culvert on Peteru channel which is reported to have been much dama[illegible].

10. These are the damages done by the high floods which lasted from the 1st to 7th August. The river began to fall on the 7th and it went down sufficiently low to allow of commencing the work of restoration on the 15th. Work was accordingly commenced at Kolluru, Peddapulivarru and Penumudi and was in good progress. But the rise of the river again on the 20th prevented any further progress and no work was done from 21st to 24th. The first two breaches at Kollur were very nearly closed, but the bank was not made high enough, as it was raised in layers. Overseer K. Sreenivasa Iyer has spared no pains in raising and strengthening this bank and judging from the work that has been done, I considered that the overseer deserves much credit.

11. All the water that flowed through the third reach was flowing through the Penumudi breaches and there was not a drop of water in the canal below the Iskapalli channel head-sluice. The ryots of Nallur, Chatragadda and Kamarazugadda, whose lands were not affected by the floods, had their lands transplanted and they were in need of water. I tried my best to close the Penumudi breaches on the right bank by putting in bamboo pegs and nanel rollers, but, on account of the rise of the river, my attempt proved unsuccessful. These men that were in need of water thought that the only way to get water is to cut open a breach to the flood bank below the Iskapalli channel sluice and accordingly, on the night of the 22nd, they stealthily cut two breaches—one about 15 feet long and the other about 30 feet long. The eastern Sub-divisional officer Mr. K. R. Rangasamy Iyengar, who was at Penumudi, at once ran to the spot and made a bold attempt to close the breaches by putting in ring bunds and succeeded in doing so by putting in bamboo piles, nanel rollers and palmyra trees, the depth of water on the lanka outside the breaches being not less than 4 feet. The Sub-Collector inspected the spot on 25th and proposed to levy penal assessment on the lands so irrigated and necessary lists were prepared by the Delta Superintendent.

12. *Works of restoration.*—These second floods subsided on the 24th and work of restoration was commenced on the 25th, but, on account of rains, no real work was done on 25th and 26th. From the 27th forward steady progress is being made and I hope to be able to carry water for irrigation in the third and fouth reaches in about a week, provided rains do not interrupt the work. But the closing of breaches and formation of ring bunds can be fully completed only by about the end of September.

13. *Causes of damage.*—Having dealt with the damages done to the different works, I now proceed to look to the causes of these damages. The one general cause which is well known to all is that the floods are higher than the maximum on record. When I found that the flood-level below Mortota was generally from 3 to 4 feet below the top of flood bank and that the bank was overflowed from Kollur to Penumudi. I naturally thought that it should be due to the changes in the river-bed. I looked over the river charts and found that the width of waterway exclusive of the lankas in the bed of the river varies from 7,000 to 10,000 feet above Vellatur, but at Penumudi it is only 4,200 feet and lower down opposite Peratlanka, it is only 2,400 feet exclusive of the Puligadda arm. The Puligadda arm is silted up at head and although there is water flowing through the arm during high floods, the discharge through the arm will not be equal to the discharge through 500 feet width of the deep river-bed. The narrowness of the waterway below Penumudi led to the backing up of the flood waters above Penumudi and hence the banks were overflowed. This is only my conjecture and its correctness can be ascertained after the flood-levels are taken. It follows, however, that the ultimate width of the river should be laid down once for all and that the conservancy works should be done to suit this width. Some cross sections have been taken and I have ordered some more, and, when these are received, I shall calculate the ultimate width of the river and lay down a programme of work to be done.

14. *Damage to villages.*—The villages of Godavarru, Bomminadipalem, Chilamore, Vellatur, Turupupalem, Pedda Pulivarru, Rani Ananthavaram, Penumudi and Kamarazugadda to the east of Bank canal, and Kollur, Bhattiprole, Peteru, Répalle, Iskapalli and Surepalli to the west of Bank canal were under water during the floods. Several houses have fallen down, but there has been no loss of life. The people from the lankas in the bed of the river were all brought over on boats; but there has been some loss of cattle and this loss is very little. I have not heard of much loss of stores of grain.

15. *Fodder for cattle*—is very scanty as most of the straw heaps have been drifted away by the floods. People are now getting green leaves of all sorts including Tumma, Luvvi and Rani and some are even stealthily cutting away Rella grass from the lankas and Government plantations; special arrangements have been made to prevent such stealth of Rella, as the Rella now available is not even enough for carrying on the plantations during the ensuing working season.

16. *Damage to crops.*—These floods came in just at the time of transplantation. Some lands were transplanted and some were ready for transplantation. Both the seed beds and the transplanted lands from Kollur 21/0 to Nallur 35/0 were submerged in water for about twenty days and they are either silted up or washed away or rotten and the loss in this way is considerable. Between Kollur and Nallur there are some dry lands of Donapudi and wet lands of Bhattiprole, China Pulivarru, Vellatur and Pedda Pulivarru that have not been affected, and for these lands as much as water as is available is now being supplied. I am closing the breaches without closing the Bank canal entirely in order to assist cultivation in unaffected lands as much as possible. In the fourth reach of Bank canal there has not been much damage to crops. Except opposite the breach at Peratlanka and opposite the breach in the right bank in the 46th mile, the other lands were not affected by the floods. The flood waters flowing through the canal were utilized for irrigation and the lands from 40 to 41½ miles and from 42½ miles to 45 miles have been transplanted and the crops are in good condition. From 35 miles to 40 miles, the crops are withering for want of water and I hope to supply water in about four or five days.

17. *Restoration of cultivation.*—With regard to the affected lands, it is possible to supply water within a week, but neither seedlings nor seeds are available to make a fresh start for cultivation; seedlings as far as available are being purchased and I hear that in one or two places seeds have been sown, but this must bear a very small proportion to the requirements. As the stores of grain would also have been affected by the floods, and as it is not possible to get good seeds, most of the affected lands, about 20,000 acres, as far as I can make out, will be left waste or cultivated dry.

18. *Work done by members of Public Works Department.*—I do not consider it necessary to go into this subject again, as I have already dealt with it in my previous report—*vide* my No. 206 S., dated 21st August 1896. I herewith enclose extract from my inspection notes for the month of August and also progress reports of Overseer K. R. Rangasamy Iyengar, eastern Sub-divisional officer, for the periods—1st to 10th and 11th to 20th August—and eleven other progress reports of other subordinates.

STATEMENT of breaches in Kistna right flood bank and the Bank canal of Western delta caused by the extraordinary flood of 1896 in the Kistna river.

Serial No.	Mileage of Bank canal	Position.	Bank. R.	Bank. L.	Length approximate.	Major M. or Minor P.	Natural or artificial.	Remarks.
1	2	3	4	5	6	7	8	9
		Kistna right flood bank.						
1	20/6 to 21/0	Opposite to Kollur village.	..	..	100	M.	Natural.	
2	..	....	..	..	500	M.	Do.	
3	..	....	..	..	100	P.	Do.	
4	22/5	Yalagalagundy ..	..	..	320	M.	Do.	
5	27/4	Near Pedda Pulivarru ..	..	..	220	M.	Artificial.	Made by Pedda Pulivarru villagers to get relief to their village.
6	28/0	Do. ..	..	..	200	M.	Do.	
7	28/3	Do. ..	..	..	320	M.	Do.	
8	31/0	Opposite to Pallipalem ..	..	..	120	M.	Natural.	
9	31/4	At Oleru ferry	..	..	150	M.	Do.	
10	31/6	....	..	..	160	M.	Do.	
11	22/0	....	..	..	90	P.	Do.	
12	32/2	Near Rani Ananthavaram.	..	..	300	M.	Do.	
13	..	Do.	..	..	300	M	Do.	
14	32/2	Below Ananthavaram ..	..	..	190	M.	Do.	
15	32/2	Do. ..	..	..	76	P.	Do.	
16	..	Do. ..	..	..	140	P.	Do.	
17	34/4	Opposite to Aravapalli channel.	..	..	35	P.	Artificial.	Made by ryots of Nallur on 22nd night to water their fields.
18	34/6	Above Nallur sluice ..	..	..	15	P.	Do.	
19	41/6	Peratlanka	..	..	150	P.	Natural.	
20	..	Do.	..	..	170	M.	Do.	
21	41/6	Do.	..	..	100	P.	Do.	Due to gap left by contractor Purnanandam in forming flood bank.
22	..	Do.	..	..	70	M.	Do.	
23	..	Do.	..	..	240	P.	Do.	
24	..	Gollapalem ramp ..	..	..	180	M.	Do.	
		Bank canal—Right bank.						
1	20/6 to 21/1	Opposite to Kollur village.	R.	..	1,850	P.	Natural.	Scours here and there, not very serious.
2	22/5	Yalagalagundy ..	R.	..	350	M.	Do.	Bank washed away into scour. Scour considerable and about 20 feet.
3	27/0	....	R.	..	150	P.	Do.	
4	27/4	Near Pedda Pulivarru ..	R.	..	270	M.	..	
5	27/7	Do. ..	R.	..	50	P.	..	
6	28/0	Do. ..	R.	..	400	M.	..	The Vellatur side channel bank too has been washed away at these places.
7	28/3	Do. ..	R.	..	350	M.	..	
8	28/6	....	R.	..	30	P.	..	
9	29/1	Near Garigapudi ..	R.	..	150	P.	..	
10	30/1	Near Jagajjeru ..	R.	..	30	P.	..	
..	..	....	..	..	30	P.	..	

Statement of Breaches in Kistna Right Flood Bank and the Bank Canal of Western Delta caused by the extraordinary Flood of 1896 in the Kistna River—*cont.*

Serial No.	Mileage of Bank canal.	Position.	Bank. R.	Bank. L.	Length, approximate.	Major M. or Minor P.	Natural or artificial.	Remarks.
1	2	3	4	5	6	7	8	9
		Bank canal—Right bank—cont.						
11	31/0	At Voleru	R.	..	40	P.	..	
12	31/4	Voleru road ferry ..	R.	..	150	M.	..	
13	31/6	Balow do. ..	R.	..	100	M.	..	
14	..	Do. ..	R.	..	140	M.	..	
15	32/2	Near Thurpupalem ..	R.	..	300	M.	Artificial.	
16	..	Avantavaram	R.	..	300	M.	Do.	
17	32/7	Above Repalle sluice ..	..	L.	66	P.	..	
18	..	Do. ..	R.	..	250	P.	..	
19	..	....	..	L.	185	M.	..	
20	..	Opposite to Repalle sluice.	..	L.	170	M.	..	Bank half cut away.
21	33/0	....	..	L.	95	M.	..	Do.
22	31/1	Below Repalle sluice ..	..	L.	85	M.	..	
23	..	....	..	..	180	M.	Artificial.	Made by overseer.
24	33/2	....	..	L.	40	M.	..	
25	33/6	Above syphon sluice ..	..	L.	63	P.	Natural.	
26	..	Below do. ..	..	L.	190	M.	..	
27	..	....	R.	..	160	M.	..	
28	33/7	....	..	L.	80	P.	Natural.	
29	34/7	Chatragadda	R.	..	30	P.	Artificial.	Made by overseer.
30	42/0	Near Peratlanka ..	R.	..	165	M.	Do.	Made by towpath gumastah.
31	..	Head of No. 6 channel ..	R.	..	15	P.	}	
32	42/5	Ramp of Peratlanka ..	R.	..	40	P.	}	
33	42/7	Above 43/0	R	..	15	P.	} ..	Due to gap left in the new flood bank formed last year.
34	..	Below 43/2	R.	..	12	P.	}	
35	..	Do. ..	R.	..	6	P.	}	
36	45/3	Below Adivipalem ..	R.	..	30	P.	}	
		Iskapalli channel.						
1	1/3	....	R.	..	150	M.	Artificial.	Made by the Deputy Tahsildar with the permission of the overseer and delta superintendent.
2	..	....	..	L.	150	M.	Do.	
3	2/4	Near Uppudi donka ..	R.	..	600	M.	Do.	Made by the Deputy Tahsildar on his own responsibility.
4	..	....	..	L.	500	M.	Do.	
5	3/5	....	R.	..	80	P.	Do.	
6	..	....	..	L.	80	P.	Do.	
7	3/6	Ananthavaram ..	R.	..	600	M.	Do.	Made by the overseer to relieve Repalle and Peteru.
8	..	....	..	L.	500	M.	Do.	
9	4/1	Above aqueduct ..	R.	..	400	M.	Do.	Made by the overseer to save aqueduct.
10	..	....	..	L.	400	M.	Do.	
11	4/5	....	..	L.	250	M.	..	
12	..	....	R.	..	250	M.	..	
13	5/2	....	..	L.	160	M.	..	
14	..	....	R.	..	60	P.	..	
15	..	....	R.	..	120	M.	..	
16	..	....	R.	..	60	P.	..	
17	..	....	..	L.	190	M.	..	
18	..	....	R.	..	60	P.	..	
19	5/2	....	..	L.	70	P.	..	
20	..	....	..	L.	164	M.	..	
21	5/3	....	R.	..	60	P.	..	
22	5/5	....	R.	..	100	P.	..	
23	..	....	R.	..	100	P.	..	
24	..	....	..	L.	200	M.	..	
25	5/6	....	R.	..	120	M.	..	
26	..	....	..	L.	120	M.	..	
27	5/7	....	R.	..	50	P.	..	
28	..	....	R.	..	350	M.	..	
29	..	....	..	L.	174	M.	..	
30	6/0	....	R.	..	32	P.	..	
31	..	....	..	L.	16	P.	..	
32	6/2	....	..	L.	200	M.	..	
33	..	....	R.	..	200	M.	..	
34	..	....	R.	..	100	P.	..	
35	6/6	....	R.	..	90	P.	..	
36	..	....	R.	..	180	M.	..	
37	6/7	....	R.	..	150	M.	..	
38	..	....	R.	..	150	M.	..	
39	..	....	R.	..	50	P.	..	
40	7/0	....	..	L.	230	M.	..	
41	..	....	R.	..	140	M.	..	
42	..	....	R.	..	160	M.	..	
43	7/1	....	..	L.	60	P.	..	
44	7/2	....	R.	..	20	P.	..	

Statement of breaches in Kistna right flood bank and the Bank canal of Western delta caused by the extraordinary flood of 1896 in the Kistna river—*cont.*

Serial No.	Mileage of Bank canal.	Position.	Bank. R.	Bank. L.	Length, approximate.	Major M. or Minor P.	Natural or artificial.	Remarks.
1	2	3	4	5	6	7	8	9
45	7/4	....	R.	..	90	P.	..	All these breaches were more or less cut on purpose by the villagers of Sajjavaripalem, Pallaputla and Iskapalli as these villages were submerged in about 3 or 4 feet of water. The overseer and delta superintendent were engaged in cutting breaches above aqueduct at suitable places, and before they could go lower down, the ryots cut breaches wherever they liked. By a judicious selection of the sites, about two-thirds of the number of breaches could have been avoided. It is much to be regretted that subordinates were not able to go from place to place quickly and that the villagers had no patience to wait.
46	7/6	....	R.	..	53	P.	..	
47	..	....	R.	.	80	P.	..	
48	..	....	..	L.	90	P.	..	
49	..	....	..	L.	50	P.	..	
50	..	....	R.	..	120	M.	..	
51	..	....	R.	..	150	M.	..	
52	7/7	....	R.	..	120	M.	..	
53	8/0	....	R.	..	64	P.	..	
54	8/2	....	R.	..	60	P.	..	
55	..	....	..	L.	70	P.	..	
56	..	....	R.	..	60	P.	..	
57	8/3	....	R.	..	45	P.	..	
58	..	....	..	L.	30	P.	..	
59	8/5	....	..	L.	180	M.	..	
60	..	....	..	L.	90	P.	..	
61	..	....	R.	..	60	P.	..	
62	..	....	R.	..	50	P.	..	
63	..	....	R.	..	65	P.	..	
64	8/6	....	R.	..	50	P.	..	
65	..	....	R.	..	32	P.	..	
66	9/0	....	..	L.	60	P.	..	
67	..	....	..	L.	60	P.	..	
68	9/1	....	R.	..	100	P.	..	
69	..	....	R.	..	40	P.	..	
70	..	....	R.	..	40	P.	..	
71	9/4	....	..	L.	70	P.	..	
72	..	....	..	L.	220	M.	..	
73	..	....	R.	..	550	M.	..	
74	..	....	..	L.	100	P.	..	
75	9/5	....	R.	..	70	P.	..	
76	..	....	R.	..	100	P.	..	
77	..	....	..	L.	60	P.	..	
78	..	....	R.	..	50	P.	..	
79	..	....	R.	..	60	P.	..	
80	..	....	R.	..	120	M.	..	
81	9/6	....	R.	..	100	P.	..	
82	..	....	R.	..	106	M.	..	
83	..	....	R.	..	70	P.	..	
84	..	....	..	L.	64	P.	..	

M = Breaches with considerable scour. P = Breaches when the scour is either ordinary or *nil*.

30th August 1896. (Signed) K. R. RANGASAMI AIYANGAR,
Sub-Divisional Officer.

From the Superintending Engineer, II Circle, dated 12th October 1896, No. 1891 K.

No. 193 I.

Note by the Chief Engineer for Irrigation.

A further report from the Superintending Engineer, II Circle, on recent floods in the Kistna, with detailed reports of the three Kistna Divisional officers, is submitted to Government.

2. The Superintending Engineer has already in G.O., No. 789 I., dated 29th September 1896, been given permission to institute measures for restoring damaged works and guarding against future damage with the proviso that departure from financial rules is to be restricted as much as possible. No further orders on the subject seem necessary. The provision of funds for the work expected to be done this official year is dealt with in other correspondence.

3. The report on the effect of the railway bridge referred to in this office-note printed with G.O., No. 789 I., dated 29th September 1896, is still awaited.

4. The undersigned concurs with the Superintending Engineer in considering the following officers as deserving of special mention for the excellent work they did during the floods:—

Mr. H. T. Keeling, Executive Engineer,
„ U. N. Joyce, Sub-Engineer,
Conductor J. S. Joyce,
Sergeant C. J. Smith;

and desires to bring to the notice of Government the unremitting and well-directed exertions of the Superintending Engineer, Major Baddeley.

CHEPAK,
13th October 1896.

(Signed) W. HUGHES,
Chief Engineer for Irrigation.

ORDER—No. 999 I., dated 27th November 1896.

Recorded.

2. His Excellency the Governor in Council notices with satisfaction the excellent work done by the Executive Engineer and the subordinates named in paragraph 4 of the note by the Chief Engineer for Irrigation. His Excellency in Council has pleasure in recording his approval of the unremitting and well-directed exertions of the Superintending Engineer, Major Baddeley.

3. A copy of these Proceedings will be forwarded to the Government of India, in continuation of those forwarded with endorsement No. 790 I., dated 29th September 1896.

[Here enter No. 1000 I., dated 27th November 1896.]

(True Extract.)

(Signed) W. HUGHES,
Joint Secy. to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ „ Public Works Department.
„ Consulting Engineer for Railways.
„ Superintending Engineer, II Circle.
„ Examiner, Public Works Accounts.

ENDORSEMENT—No. 1000 I., dated 27th November 1896.

Forwarded.

(By order)

(Signed) W. HUGHES,
Joint Secy. to Government,
Irrigation Branch.

Exd. T. K. Narayana Aiyangar.

Pwd 664/58

Wootton Hill,

Bournemouth

29th Decr. 1897

From

Lieut. Colonel W.L.C. Baddeley R.E.

To

The Secretary to Government

P.W.D. Madras

Sir,

I have the honour to request that you will kindly lay this letter and its enclosures× before His Excellency the Governor, for favorable consideration.

× Sent by Book Post & Govt. Orders as detailed in the letter.

2) I would most respectfully ask His Excellency to consider the following facts in connection with my service in the P. W. D.

3) First, as regards my seniority in the Department, this was settled by G. O. No.1005 W of 28th March 1888 (copy attached) and until the recent promotion of Mr. De Winton I have always been considered to be his senior in length of service, and have always been promoted before him.

G.O . 10th Oct.'79 No. 2038
G.O. 5th Octr 1881 No. 1350
G.O. 690 W of 3rd March 1883.
G.O. 1996 W of 19th July 1883
G.O. 999 I of 27th Nov. 1896

(5 copies attached)

4) Secondly, a perusal of the marginal G.O. s will show that my services in the famine of 1876__78 met with the strong approval of the Government of Madras, and that I was granted a special concession by the Secretary of State for India for those services. Also that during the last year His Excellency was pleased to record his "approval of the unremitting and well-directed exertions of

the Superintending Engineer, Major Baddeley" in connection with the floods on the Kistna river in August 1876.

5) I have ~~seen~~ 26 years service in the Army, and 23½ in the P.W.D., and during the whole of this time I have never been found fault with, but on the contrary I believe that my conduct of my duties has invariably met with the approval of Government.

6) The effect of the promotion of Mr. De Winton, my former junior, is most serious to me in the matter of pay, and this being a technical point, I beg to be excused for explaining it in detail. The facts are as follows: While serving in the P.W. D. I draw Military pay plus staff pay, but although I am a ~~First~~ Lieut Colonel in the army, and a Superintending Engineer 3rd Class , I am debarred from drawing my full pay, for by the rules of the Department, a Lieut-Colonel can only draw his full military and staff pay when he is a Superintending Engineer 2nd Class. Had any one of the officers senior to me been promoted to Chief Engineer I should in the ordinary course have received a step in the Department, and then I could have no ground for any complaint, but the promotion of an officer junior to myself blocks all promotion above me, and will, I fear, result in a loss of pay to me of about Rs 150 per ~~annum~~ mensem for a very considerable time.

7) In conclusion I would most respectfully ask His Excellency to again consider all the facts connected with my service, for the most important are not entered in ~~any~~ my printed record of service in the P.W. Secretariat, and I feel sure that they have never until now been brought to the notice

of His Excellency.

I have the honour

to be Sir,

Your most obedient servant,

W C Baddeley

Lieut. Colonel RE