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MADRAS RECORD OFFICE.**Government of Madras.****DEPARTMENT.**

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*Proceedings of the Madras Government, Public Works Department,
11th April 1865.*

No. 202. Read the following Proceedings of the Governor General of India in Council, Public Works Department (Civil Works—Miscellaneous), dated Fort William, 8th March 1865, Circular No. 20 :—

Annual Progress Report of Public Works for the year 1863-64.

Read Annual Progress Report of Public Works for the year 1863-64 (see annexure).

ORDER.—Ordered, that copies be forwarded for information to the Local Governments, and Administrations noted in the margin.

(Signed) E. C. S. WILLIAMS, Captain, R. E.,
Under Secretary to the Government of India.

To the Secretary to the Government of Madras, Public Works Department.

No. 203. ORDER THEREON, 11th April 1865, No. 991.

CIVIL WORKS, No. 37.

Ordered that a copy of the Report received with the foregoing Circular be furnished to the Financial Railway Department.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Financial Railway Department.

Exd, S. T. Augustin.

Enclosure to Public Works Circular No. 20 of 1865.

*ANNUAL PROGRESS REPORT of Public Works in
India for the year 1863-64.—Dated 27th February, 1865.*

MILITARY WORKS.

MADRAS.

About a lakh of Rupees has been spent in Fort St. George, in the completion or commencement of quarters for 44 Soldiers' families. The auxiliary buildings for artillery at Bellary are in progress. Half the allotment for the year was spent. MADRAS.

Dragoon Barracks at Bangalore are being pushed on. Six ranges of barracks have been completed and several of the auxiliary buildings. Two other ranges are nearly ready, and sixty family quarters are half finished. Bangalore.

Of Miscellaneous Military buildings the two sets of Gun Powder Manufactory. Powder Mills at the presidency have been pushed on and nearly completed.

Some slight progress has been made in the works of the Ulsoor water project. Ulsoor water project at Bangalore.

The foundations and basement have been laid of the Trichinopoly. Grand Magazine at Trichinopoly.

BOMBAY.

The Harbour Defences have been pushed on with vigour; the whole expenditure having been $4\frac{1}{2}$ lakhs, of which more than 2 lakhs were spent on the Oyster Rock Battery alone, and the remainder on batteries and works at five other positions. The piers of the Oyster Rock Battery have progressed greatly, and the revetments, which are 10 feet thick, have been raised to an average height of $6\frac{1}{2}$ feet, and the interior of the Battery to an average height of 5 feet above high-water-mark. The total amount of masonry and filling in completed, being 3 lakhs of cubic feet. A storm prevented the work being fairly started until November. The Cross Island Battery is now armed with 110-pounder Armstrong guns. The Colaba Point Battery has progressed. The Butcher's Island Battery has been improved, that on the Apollo pier finished. The Middle Ground Battery has been begun, a pier at Kenery Island built, and the working of the Pao Pir quarries facilitated. Much progress has been made in the demolition of the Fort; the debris of the ramparts furnished metalling for new roads, which are 66 feet wide, with foot paths 27 feet wide on either side. Plans are being prepared for land defences. A general hospital is building by Hospital.

BOMBAY.

Aden.

contract, on a design which gained a public competitive prize. Batteries are also in progress at Aden, and defensive works have been repaired.

Kirkee and Poona.

The roads at Kirkee and Poona have been metalled.

Belgaum Cantonments.

The battery in the Fort at Belgaum is being removed to the Cantonment and the works in connection with this are progressing. Quarters for the families of soldiers are building, or complete, at Sattara, Poona, Ahmedabad, and Neemuch. Upper-storied barracks at Wanowree and Aden; quarters for sick officers at Matheran; hospitals at Mhow and Indore; a reading-room for men at Poorundhur, a garrison library at Kirkee, and other barracks at Kirkee and Asseerghur. It may be remarked that these last were partly built by the Europeans of the 33rd Regiment, whose assistance contributed much to their early completion. The double-storied barracks at Wanowree are building by contract, and the progress and quality of the work is reported on favourably. Three barracks have also been completed at the Mount Aboo Sanitarium, and five with subsidiary buildings are in a forward state. Minor improvements and additions have been made to the barracks and military buildings at other stations.

Wanowree.

Mount Aboo.

Kirkee.

Navy.

Butcher's Island.

Two and a half lakhs were spent in purchase of land at Kirkee for the new ordnance buildings.

A hospital and subsidiary buildings have been built on Butcher's Island, and slight improvements have been made in the dock-yard.

BENGAL.

Fort William.

Parisnauth.

Additions and improvements have been made to the buildings in Fort William, and to others at Cossipoor, Dinapoor, and Dacca; accommodation for 32 men has been provided on Parisnauth Hill, a new cantonment marked out at Shillong, and improvements have been made in the drainage at Dum-Dum. Magazines have been made at seven Military Stations, water supply as a precaution in case of fire has been provided at three others, and the usual repairs have taken place.

NORTH WESTERN PROVINCES.

N. W. PROVINCES.

Agra Fort.

The Fort wall at Agra, which fell in during the rains has been repaired. The work was a matter of some difficulty and danger.

Allahabad.

Nynee Tal.

The principal works at the new Military buildings at Allahabad are still uncommenced, and the work at Nynee Tal has been limited to the collection of material pending final orders. Thermantidotes have been introduced in the Agra barracks on a principle suggested by Dr. Linton; the married men's barracks at Agra have been improved, and a double storied barrack has been constructed in the Fort. A Native Infantry Hospital has been built at Morar, but the works at that Station have been suspended until the question of its permanent occupation is settled.

PUNJAB.

PUNJAB.

Umritsur.
Jutta.
Delhi.

A few minor improvements and repairs have been made to the defensive works at Govindghur (Umritsur), and to some stations on the frontier. A new outpost at Jutta has also been formed. The gate batteries at Delhi have been improved, but the fort glacis has been delayed, owing to some modifications ordered during the late Viceroy's visit.

PUNJAB.

Many of the cantonments have been improved by the clearance of debris. Attention has also been paid to the improvement of drainage, water supply, and the metalling of roads, at many of the stations; the principal works of this description being at Umballa, Jullunder, Mooltan, Umballa Jullunder. Meean Meer and Peshawur.

Some double-storied barracks for Europeans have been completed in the fort, Delhi; and the masonry of two other Delhi. European barracks at Dhurmsala. Others are also in progress at Subathoo, Ferozepoor, Kamilpoor and Peshawur. Those Subathoo, Peshawur. at the latter station are nearly finished; the barracks on the Fort at Ferozepoor include quarters for Officers. Officers' quarters. Quarters in Fort Dhuleepgurh, Bunnoo, are being adapted Bunnoo. for officers. Hospitals for men have been completed, and Hospitals. others improved at Delhi, Umballa, Umritsur, Dugshai, Subathoo, Mooltan and Rawul Pindee, and female hospitals Female hospitals. are in progress at Umritsur and Abbotabad; Native Infantry lines and barracks are also in progress at Abbotabad and Dera Gaze Khan. Regimental Workshops and Artificers' shops for the Artillery, have also been constructed at Umballa.

Improvements and additions have been made to the Ordnance, Delhi. depôt at Delhi, and to the magazine at Akalgurh, (Dera Ismael Khan.)

A few buildings and improvements have been made at Commissariat. Kussowlie, Subathoo, Sealkote and Murdan. Kussowlie.

STRAITS SETTLEMENTS.

STRAITS.

A lattice bridge 50 feet span across the Campoung Malacca Canal to afford direct communication between Fort Canning and the Arsenal was completed; while the construction of a second bridge 130 feet long across the river for the same object was delayed, owing to a difficulty about the foundation. Some minor works have been completed or are in progress in the south Battery and at Fort Cornwallis. Fort Cornwallis. The outworks of this Fort were completely undermined by the action of the sea. Satisfactory repairs were however effected with granite boulders, the height of the work being somewhat reduced.

The new barracks at Malacca were completed at a cost Malacca. of Rs. 10,500.

The total outlay during the year on Military Works was about Rs. 90,000.

Little progress has been made with the coal depôt which was begun this year at Pulo Brani Harbour. Pulo Brani.

CENTRAL PROVINCES.

C. PROVINCES.

At Kamptee considerable progress has been made in family quarters for the soldiers, Rs. 40,000 having been expended in this work. Minor buildings have also been executed. Kamptee. At Mohtoor the sanitarium barrack has been proceeded Mohtoor barracks. with and was occupied during the hot season by a detachment of Europeans. At Jubbulpoor a few additions and Jubbulpoor. alterations have been made to the Infantry barracks. At Saugor some petty works have been constructed, and the Saugor. usual repairs executed; the permanent barracks and married quarters at Saugor are deferred, pending the decision as to their site. At Nagode a few minor works and some repairs Nagode. have been completed, and similar work has been done at Nowgong. Nowgong.

MILITARY WORKS.

BRITISH BURMAH

Rangoon.

BRITISH BURMAH.

The Cantonment and boundary roads at Rangoon have been much improved, by reduction of gradients, and the metal-ling and construction of the necessary drains and culverts. Some minor buildings for Infantry and Artillery have been either completed or well advanced. Three permanent family barracks for the Europeans have been completed and two others with out-houses are well advanced at Thavetmyo. The Cantonments have been improved and some slight alterations have been made to the redoubt. The redoubt has been completed at Tounghoo; a barrack fitted up for the families of the Artillery, and another adapted for a school room. The European and Native Infantry hospitals have been improved and repaired and some other minor buildings have been constructed. 362 feet of the old fort rampart at Moulmein have been levelled with benefit to the Native Infantry barracks; the drainage of these buildings has been improved and some slight work done for the Commissariat Department.

Thavetmyo.

Tounghoo.

Moulmein.

OUDH.

Lucknow.

Cantonments.

Fyzabad.

Barracks.

OUDH.

The sanitary condition of the Muchee Bhawun Fort at Lucknow has been improved, and further measures are under consideration. Some slight drainage works and improvements suggested by the Medical Authorities have been completed, and the roads here and at Fyzabad have been kept in order.

One female hospital and two schools at Lucknow were not begun, sanction being delayed. Two barracks to contain half companies were begun and finished. A female hospital and married men's barrack, and a school at Fyzabad are under consideration. Other minor works have been begun and finished at Lucknow, Fyzabad, and Sectapoor.

MYSORE.

Mysore.

MYSORE.

The only work of importance was the construction of a new Native Infantry Cantonment, at two miles north of the city of Mysore.

HYDERABAD.

Trimulgherry.

Water-supply.

HYDERABAD.

The clearance of rocks in the Cantonment at Trimulgherry has been continued. Little was done towards the water-supply project owing to the non-receipt of the pipes. They have now arrived.

The communications and drainage of the Cantonment station, and some of its buildings have been improved.

Of the four blocks of family quarters for European Infantry now under construction at Trimulgherry, one is finished, another well advanced, and two have been raised three feet. More progress would have been made, but for modifications adopted at the suggestion of a Medical Committee. Two sets of Officers' quarters are nearly finished, and quarters for three Field Officers, quite so. The school-room which will also serve as a Presbyterian Church has been commenced and the school master's quarters are well advanced. The Roman Catholic Chapel is in progress. For the Brigade of Artillery at Trimulgherry auxiliary buildings and two ranges of family quarters are in course of construction, but little progress has been made owing to the scarcity of labour and materials. At Secunderabad, additions and improvements have been made to the military buildings, chiefly to those of the Artillery and Cavalry.

Barracks, Trimulgherry.

Secunderabad.

CIVIL WORKS.

CIVIL WORKS.

MADRAS.

MADRAS.

Buildings.—The Court House at Berhampoor has been nearly finished during the year, and of that at Cuddalore a height of nine feet of wall has been built. The Zillah Jail at Berhampoor has been completed; those at Vizagapatam, Rajamundry, Salem, and Coimbatore are still in progress. An upper story has been added to the High Court Ward at the Madras Penitentiary.

Madras Penitentiary.

The Salt platforms on the west side of Cochrane's Canal have been completed, and those on the east side commenced.

The Government House and Chepauk have been improved by the construction of roads and walks, and the planting of trees; and an upper story has been added to the Private Secretary's residence.

Private Secretary's residence.

The upper story to the Government Central Museum is nearly completed.

Government Central Museum.

Half a lakh of Rupees has been spent in the addition of an upper story to the Madras General Hospital. The work has progressed well.

General Hospital.

Preliminary operations have commenced, such as the clearing of site, preparation of materials, &c., in connection with the Lawrence Asylum at Ootacamund.

Lawrence Asylum.

Agricultural.—Nearly a lakh of Rupees was spent in increasing the height of the Godavery anicut.

Raising the Godavery anicut.

The works on the Ellore high-level canal which connects the Kistna and Godavery, have been pushed on. Upwards of 108 lakhs of cubic feet of earth were excavated, and there is every prospect of the work being sufficiently advanced by the setting in of the rains of 1864, to allow of the Tumelair being turned down its new course. The masonry drainage works on the Ellore Canal are nearly completed.

Ellore high-level canal connecting the Kistna and Godavery Rivers and their dependent canals.

The widening of the Rallee and the Gunnaverum main Channels is completed; the Ambajeeputta, Pullateccurree and Samintacurree branch channels have been finished; and the inner bank of the East Bank Channel has been rectified.

Extension of irrigation in the Central Delta Godavery.

In the lower section of this canal the tidal lock and calingula and some minor works were completed during the year. The whole of the canal was used uninterruptedly for navigation throughout the season.

Masulipatam Canal. Kistna.

This Channel is still incomplete, but, with the exception of one or two branches, it has been in full use.

Kistna. Ryve's Channel.

This project has been pushed on, the channel is nearly completed, and the work and the foundations of another have been finished.

Pullairo project.

A first class lock was all but finished, and the foundations of another were partly laid. The canal is now open as far as this last work.

Nizampatam Canal.

This channel was widened along a great part of its course; and a calingula at Vellatur was nearly completed.

Western Bank Channel. Vellatur Calingula.

This channel also was enlarged for about six miles and the necessary masonry works constructed. Much still remains to be done to the embankments, but with this exception the works are nearly completed.

Commamoor Channel.

CIVIL WORKS.

MADRAS.

Works in the Pennair Delta Nellore; Jaffer Sahab's Channel. Widening and extending the Herrakalwah, Sergoopah, Bellary.

Palar project.

Poyney project, North Arcot.

Govarapett Channel, South Arcot.

Lower Coleroon anicut, Tanjore.

Channels from the Bhowany River, Coimbatore.

Metalled roads.

Road from Mojogoda to Sunkarakole in Ganjam.

Road from Vizianagram to Jeypoor.

Trunk Road No. 6, Nellore.

Road from Cuddapah to Madras.

Sonepay Ghat, Cuddapah.

Road from Cuddapah to Nundial.

Cuddapah and Bellary Road.

Kunderu bridge, Kurnool.

These works are well advanced towards completion and are in full operation.

Of this channel 3½ miles were completed including masonry works. The channel has been so much improved that 50 acres of dry land have been brought under wet cultivation, and it is expected that the adjacent lands bordering on it will yield a second crop.

Fifty-two tanks under the Rambankal, the main channel in the Madras District, were put into thorough order at a cost of nearly half a lakh, and a considerable sum was spent in the North Arcot District on the Cauverypauk, Govindavaddi, Mahendravaddi main channels, and on several minor works. The first two main channels are almost complete and in good working order, the third will be finished in 1864-65.

About half a lakh was expended during the year in raising the anicut and in extending and improving channels and tanks.

Eleven miles of this channel have been improved.

The re-construction of seven arches of this anicut and of the portions of the body and apron corresponding to those arches has progressed. The piers and body of the work from the foundations upwards to the springing of the arches, have been completed.

Two of the principal irrigation channels issuing from this river have been considerably improved.

Communications.—Several lines of metalled roads in various parts of the Presidency were in progress during the year. They are enumerated in the margin.

Seven miles of Ghat have been opened for traffic.

This road is being constructed from a grant of half a lakh by the Rajah of Vizianagram. 15 miles have been metalled and 70 tunnels and bridges constructed.

This has been opened for traffic with the exception of five miles and a break at the Musanur Valley.

From Cuddapah to Kodur (56 miles) the road is almost completed, and the worst portions of the line between Kodur and Balpallu (13 miles) have been repaired.

The road over this Ghat, 12 miles in length, has been widened from 4 to 7 yards, the revetment completed, several tunnels built, catch drains excavated and metal collected for 3 miles of road. The Ghat is quite practicable for carts.

From Cuddapah to Duvur (30 miles), the road has been metalled and provided with tunnels and road drains, and only 9 miles remain to complete the line within the limits of Cuddapah. In Kurnool, the earth-work for 36 miles of the road has been thrown up, 12 miles have been gravelled, and numerous tunnels built.

Of this important line, running over 148½ miles, 127 have been metalled. The traffic along this road at some seasons averages from 800 to 1,000 carts per diem.

This bridge, 17 arches of 32 spans, has been completed.

CIVIL WORKS.

Two miles of the road have been completed and five more are in progress.

MADRAS.

Cart road between the Salem Railway Station and Tarumunglum.

Road from Trichinopoly to Salem boundary.

Twenty-two miles of the line have been opened for traffic.

Nearly half a lakh was expended with great advantage during the year in improving this road.

Road from the Coimbatore Railway Station to foot of Conoor Ghat.

BOMBAY.

BOMBAY.

Buildings.—The additions to the mint sanctioned in 1859 are now complete; and the further additions of buildings for a copper mint are nearly so. The foundation plinth and superstructure of some minor buildings at Matheran Salt are nearly complete.

Some minor buildings constructed.

Increased accommodation has been given to the Bombay Post Office.

A lakh and a half was spent in offices and accommodation for public servants in Canara. Deductions however must be made on account of the value of materials in hand.

The hospital founded by Cowasjee Jehangeer has been finished. Cursetjee Furdoonjee Parekh's Dhurmsala Hospital. been finished or nearly so. The foundation and plinth of the Sassoon Hospital, to which David Sassoon, Esq., gave Rs. 60,000, are complete.

The church at Steamer Point is now finished—the interior fittings alone being required. St. Paul's Church, Poona, is complete as to foundations, and the Poorundhur Church finished up to the wall-plates. The Bundara, Matheran, and Colaba Churches have been beautified; the burial ground at Ahmednuggur enclosed; and materials collected for the Deccan College, to which building Sir Poona Deccan College Jamsetjee Jejeebhoy liberally contributed a lakh of Rupees.

Agricultural.—The Dharwar Canal is now ready for irrigation, the Mudduck tank is in hand, and the dam, masonry, and excavation of the Khristna Irrigation Channel favourably advanced; and the Engineer reported that the Rewaree Irrigation Channel would be ready for use during the coming monsoon. The bundara on the Girna has been completed, and its wing walls are nearly finished; the foundations of two aqueducts have been finished; a lakh of the five estimated for was spent on these works. The bundara, on the Panjur River has also been carried out. In Sindh, 12 miles of the experimental canal at Sukker have been dug. No work was done on the Alliwah Canal owing to the want of labor. The money was transferred to the Foolalee Canal, which was extended from the 53rd to the 74th, and widened from the 29th to the 63rd mile. The weir across the Mukkee has been completed; but in spite of this the revenue has decreased. The Thurr Canal is progressing satisfactorily. The weir and regulating bridge foundations have been begun, and it was hoped that water may be taken to Omercote by the year's end. Owing to floods the cuts in the Narra bed have been delayed.

The Khandallatank has been cleared. Sir Jamsetjee Water supply, Jeejeebhoy contributed Rs. 7,000, Government Rs. 3,000, towards the work.

BOMBAY.

Poona and Madras
Road.Katruz Ghat.
Sattara.Warna River.
Quoina bridge.

Sootguttee, &c.

Dharwar and Bunka-
poor.

Belgaum and Vingorla.

Bunkapoor and Karwar.

North Canara.

Arbyle Ghat.

Karwar.

Koombarlee Ghat.

Communications.—On the Poona and Madras Trunk Road the Ghat cuttings, drains, and culverts of the 19 miles between Poona and Sherwul have been finished, the remainder is in progress, and the heading of the 900 feet tunnel in the Katruz Ghat has been pierced. Between Sherwul and Sattara, distance of 37 miles, the chief work, the Narra bridge, of eleven 40 feet arches, is complete. Several other smaller bridges and drains are complete, and 14 miles of road embanked and moorumed, between Sattara and the Warna River, 59½ miles; the foundations of the Quoina bridge, seven arches of 80 feet span have been partially finished and the superstructure commenced. The remaining foundations will be difficult to get in, and delay the work. The improved lines of road over the Sootguttee and Neepacee Ghats in progress last year, are finished as well as the deviations at Kagul and Kolapoor. Six other large bridges over nullahs are also well advanced. The greater part of the Doodgunga River bridge is complete to the springing, there are five 45 feet arches; with the foundations of the Yedgunga bridge, seven arches 45 feet span, much difficulty was experienced. In one pier alone, owing to the bad soil, there was more than a lac of excavation. The Hurunkassee bridge, similar to the above, has been brought up to the springing line; a bridge of the same dimensions over the Gutpurba River is nearly completed, and the raising of the road between Belgaum and Dharwar has been commenced. The Dharwar and Bunkapoor Road has been improved by banking, and the new road from Bunkapoor has progressed favourably. The bridges begun last year have been finished. The Sadleo bridge is complete to the springing line; and three piers of the Warda bridge are up to low water level, while a fourth is being got in, leaving only two more to complete the foundations. The new line from Belgaum to Vingorla has made fair progress. Retaining walls and culverts have been finished, and the metalling commenced. Four bridges, three arches of from 15 to 30 feet span, have been completed, and six one-arched bridges, from 15 to 30 feet span, besides culverts, are in progress near Belgaum, and five bridges of one arch, from 15 to 24 feet span, and culverts, have been finished near Vingorla. Other bridges and culverts are in various stages of progress. The road between Bunkapoor and Karwar is finished throughout, the distance being 17 miles; that between Karwar and Gudduck is complete, with the exception of some bridges; and of the 21 miles between Annigherry and Hoobler, 19 are well advanced. In north Canara, nearly four lakhs of Rupees have been spent on roads, the chief expenditure, 2½ lakhs on the 54 miles between Karwar and the Arbyle Ghat, in completing 30, and newly embanking other 18 miles; and 1½ lakhs on 52 miles between Kyga Ghat and the former place; interruption in the communications is caused by the want of a road between Karwar and Nullapoor. The Arbyle approach to Karwar is open for carts and capable of bearing all the traffic likely to pass that way for the next two years. Between Karwar and Koombarlee Ghat, 6 new miles of road have been made, eight miles metalled, and various bridges and drains completed; the road to the western foot of the Ghat is very nearly ready. The original sanction for the road between Koombarlee and Chiploon being found insufficient, nothing has been done; revised estimates are in preparation.

BOMBAY.

The whole of the bridges of the Barsee tramway (with the exception of two in progress), and varying from 2 arches of 10 feet to seven arches of 30 feet, have been finished during the year; drains have been constructed, a gradient reduced, and the road widened to 24 feet. The most important work, the Seena bridge, eleven 40 feet arches, has been delayed and little progress made, owing to the Executive Engineer's illness and the impossibility of obtaining labour for pumping out water, &c. Sixty miles of the Poona and Sholapoor road have been metalled, and the improvements on the Poona and Kirkee road are progressing favourably. On the Bombay and Agra road, between Chandore and Bhoreghur, little has been done, owing to the faithlessness of the contractor. From Bhoreghur to the Nerbudda (48 miles in length), many improvements have been carried out, and large quantities of moorum spread and stacked. The foundations of one abutment of the Tekree bridge, 11 arches of 40 feet span, have been finished. The retaining wall and foundation of the Goojree bridge, 14 openings of 40 feet, are in progress. The road between Mhow and Indore has been partially re-made; 31 miles of embankment between Mhow and Indore have been widened, and one 3 arched bridge, and 2 single arched bridges, of 30 feet span, executed; 80 miles of embankment have been widened between Dewas and Beora, and metal collected. The Peeplia bridge of 50 feet, and the small bridge at Peeplia bridge. Rujwas nulla have been finished; and three arches of the Shajapoor bridge, seven arches of 30 feet span begun. The Shajapoor bridge, Poona and Ahmednuggur Road. Poona and Ahmednuggur Road has had 21 miles metalled; the piers and other improvements have also been made. The abutments of the Goar bridge have been brought up to a height of 8 feet from the bed of the river; and 15 miles of road from Ahmednuggur towards Imampoor completed. The roadway between the Ghaut and Peyton has been laid. From Indore to Simrole Ghaut, 26 miles of road have been widened or improved, the road from the latter place to Mhow is open and in good order, and the new Ghaut road at Simrole expected to be ready in the rains of 1864. The height ascended is 1,500 feet, the steepest gradient, 1 in 20. Between Ahmedabad and Gogo, eight miles of road have been completed, and embankments and bridges well advanced. From Wullah to Mooliar, 9 miles, the road has been finished; 53 miles of embankment beyond that place are ready. Three iron and 14 masonry bridges have been made, spanning altogether 1,980 feet of waterway; this road has also been advanced at the Ahmedabad extremity; 4½ lakhs were spent during the year. The Bhadur bridge has been completed, and the road connecting Sirkej and Verungaum is nearly finished.

The portion of the Dharwar road in British territory, though not quite complete, has been opened for traffic. The Portuguese boundary has been defined, but their part of the road is still unfinished. The abutments and piers of the Savitree bridge, seven 40 feet arches, have been advanced, and three less important bridges either built or begun, besides culverts, &c. Cholera, added to natural difficulties, have prevented much work on the Kondaibaree road. That from Dhoolia to Chalisgaum has been surveyed and a little work done. Of the two large and important bridges over the Boree and Girna rivers, the former has been commenced. Road progress is reported on the Malligaum and Munmar

BOMBAY.

Nargaum and Boorhanpoor.

road, seven bridges of various sizes having been constructed. Money has been spent in improvements on the road between Nargaum and Boorhanpoor which has been opened for postal traffic during the year. The greater portion of the Dhurumthur and Chowk Road is now finished, and the remaining portion progressing well. Between Chowk and the Kurjut Railway station, the road is nearly ready, and that between Bassein Railway station and Manickpoor in a forward state. A small expenditure has been incurred on the Kakree and Dohud road, *via* Godra; 2 lakhs are appropriated for this work; Railway feeders are also in progress in the Surat and Broach collectorates.

Unmetalled roads.

These consist of district roads and Railway feeders. In the Kaira collectorate nearly a lakh was spent in making roads, and in minor improvements in the Ahmednuggur collectorate about half a lakh was spent, the chief road being between Ahmednuggur and Malligaum. Railway feeders were also constructed. In the Northern Konkan about Rs. 80,000 were devoted to making and improving roads; about 37 miles were made in the Poona collectorate, and the short road between Marheh and its Railway station in the Sholapoor collectorate would have been ready, but for the failure of the contractor.

Bridges.
Poonah collectorate.
Nassick.
Waghooonda.

The Mela Nullah bridge piers in the Poonah collectorate have been built to nearly their full height. The abutments of the Nassick road bridge are up to springing and the arches begun. Seven of the nine arches of Waghooonda bridge are finished and the eighth and ninth in progress. In the Mhow division a little has been done to the Choorul bridge which is to have 5 arches of 13 feet span. In the Ahmedabad collectorate the wooden bridge on the Dholera and Dholka Road has been finished. The important bridge over the Bhogawa River on the road connecting Verungaum and the cotton port of Dholera is under construction by a contracting firm of Baroda. In the Surat and Broach district a timber bridge, 9 bays of 10 feet, has been completed, but owing to some slight necessary modifications it is not yet open for traffic. Bridges have also been built over canals between Hyderabad and Roree, on the main line of military communication between Kurrahee and the Sindh frontier. Of these, two are of three arches of 35 and 36 feet span respectively, and the remaining 21 of single arches, varying from 10 to 26 feet. Culverts have also been built; and money has been expended in raising the road and building bridges between Shikarpoor and Jacobabad.

Mhow.
Choorul.
Dholera.
Bhogawa.

Broach district.

Hyderabad and Roree.
Kurrahee.

Shikarpoor and Jacobabad.
Harbour and Navigation.
Kurrahee.
Napier Mole.

Apollo Bay.

Moody Bay.

Oyster Rock, Karwar.
Konay.

Miscellaneous.—The Kceamaree Groin and the Napier Mole at Kurrahee have been finished; an immense quantity of dredging has been done during the year, some Railway laid down, and the Napier Mole bridges have been erected. Nearly a lakh has been spent during the year. About two-thirds of the retaining wall and one-third of the filling in connection with the Apollo Bay reclamation have been completed; thirty-one acres of the work have been sanctioned; a considerable extent of the dry wall facing, and one-tenth of the filling in of the Moody Bay reclamation has been completed. New bunders have been built in the Northern Konkan; a lighthouse with subsidiary buildings has been built, the former to a height of 10 feet on the Oyster Rock in Karwar Harbour. The wharf wall and wharf road have been advanced at Konay; a lattice girder-

BOMBAY.

iron bridge, 80 feet span, which owing to the expensive foundations, cost Rs. 60,000, has been erected. The Agent deputed to erect the bridge absconded, and it was put together by an Engineer of the late Indian Navy very creditably.

A small sum was spent in an attempt to improve the River improvements, Indus.

At Kurrahee and at Mekran, Guader, and Sonmeanec, Electric Telegraph, Mekran, Guader, Sonmeanec.

offices and out-houses have been constructed; those at the three last places mentioned are in connection with the Mekran Telegraph to India.

BENGAL.

Buildings.—Extensions covering 43,000 square feet have been made to the Calcutta Custom House. The works in the new Copper Mint, Calcutta, were well advanced; their completion will cost a lakh of Rupees; additions to the Patna Opium Factory Court Houses, and minor buildings, Patna, have been finished or begun at Hazareebagh, Chupra, Hazareebagh, Mozufferpoor, Gya, Dacca, and Rampoor Bauleah.

The Post Office and Telegraph buildings have been completed from the excavations to the first floor, and a new Sailors' Home has been begun. The buildings in connection with the Chinchona plantations have been under construction at Darjeeling; improvements have been made to Sher Shah's tank, Sasseram; and the Lunatic Asylum at Cuttack, which was begun the previous year, has been finished.

A new roof has been given to St. Peter's Church, Fort William, and a new chancel to St. John's, Calcutta, Fort William. The new Church, St. James's, begun in 1862, has been completed so far as to have been opened for Divine Service. Seven feet of the plinth of Cachar Church have been built. Designs have been prepared for new churches at Darjeeling and Pooree, and arrangements made for the erection of others at Gya and Goolzarbagh. The church at Gya, Cuttack is all but finished; the Memorial Church at Arrah has been well advanced, and the Roman Catholic Chapel at Hazareebagh completed. Enclosures have been made to eight cemeteries in the province, and arrangements completed for the enclosure of five others.

One-sixth of the foundations of the new High Court Calcutta. has been finished, and new Court Houses have been built at Sylhet and Chupra. At seven other stations they have been either commenced or well advanced, and additions and improvements have been made to other judicial buildings in Bengal. The jail buildings at Deebrooghur and Secbsaugor, which have been in hand six years, are now complete; penitentiary for 100 Europeans at Hazareebagh has been well advanced. The jail at Pooree has been nearly remodelled, and additions and improvements have been made in the jail buildings of Calcutta and Alipoor.

Agricultural.—Of the most important work under this head, the Sea dyke in the Hidgellee Division, 1,024 of 1,844 Hidgellee. lakhs of cubic feet of earthwork have been completed, and an embankment has been completed at Sreekistpore, on the right bank of the Damoodah. Those on the left bank have been maintained, and in spite of the unusual flood in September 1863 did their duty thoroughly. The Halara vent channel has been closed at the request of the zemindars at

BENGAL.

Darjeeling.

whose petition it was originally constructed. With regard to the Cuttack, Pooree, and Balasore embankments, nothing of importance took place.

Bhagulpoor.

Patna.

Hazareebagh.

Cuttack.

Gowhatty.

Cachar.

Assam.

Communications.—The metalling of the Ganges and Darjeeling Road (136 miles in length) has been pushed on vigorously: 90 miles were to be ready by the rains of 1861. As regards earth-work and bridges, the upper section of this road has been nearly completed. 15 of the 21 miles, called the Darjeeling Hill Road, has been nearly completed, including three miles of rock-blasting. 18 miles, it was anticipated, would be ready by December 1861. Thirty-three miles, the northern section of the Bhagulpoor and Soree Road, has been completed entirely. The earth-work of the remaining 70 miles, and the culverts of the 14 miles of central section, are nearly complete; 40 miles of the embankment of the Patna branch road have been completed, and of these, the seven miles between Poon Poon and Meetapoor are metalled and bridged. Work on the new roads connecting Behar with Burhee and with the Railway at Luckeeserai is in progress. The Hadjeeppoor and Mozuffurpoor unmetalled road, 34 miles long, has been remodelled. Of four masonry bridges remaining on the Hazareebagh and Burhee Road, three are complete, and one of three 50 feet arches, nearly so; and two bridges, one three arches of 30 feet span, are in progress between Chowparun and Chuttra, and on this road 30 miles of metalling has been collected and half of it spread. The re-metalling of the road between Ooloobaria and Moirakha during the year completes the communication between the first place and Midnapoor. The metalling of the branch road between Paunckhoorah and Tumlook is also well advanced. On the Cuttack Trunk Road, in the Balasore Division, 80 per cent. of bridge work, one-half the earth-work, and three-fourths the causeway, have been completed; in the Cuttack Division, 70 per cent. of bridge work, 90 per cent. of causeway, and seven miles of metalling. These works comprised 380 lakhs of cubic feet of earth-work, nine lakhs of masonry in constructing 49 bridges and 9 causeways. The Gowhatty and Sylhet Road is to connect these two stations with themselves, and also with Shillong in the Cossiah Hills. Eighty-six miles of bridle track have been cleared between Gowhatty and Shillong, and 10 miles between the last place and Sylhet. Portions of the former track are 10 feet wide.

One-third of the earth-work on the 64 miles of the Sylhet and Cachar Road has been accomplished; scarcity of labour prevented further progress. Thirty-nine miles of the Assam Trunk Road have been three-fourths completed. As to masonry, 17 masonry bridges from six to ten feet span were finished, and 18 others half so. Scarcity of labour and a bad climate have to be contended with in this work. Sixty-six miles of road in Lower and 12 miles in Upper Assam have been surveyed and levelled over, and 54 miles from Luckeepoor to Kuribari examined. The third section of the road has been lined out; the road from Rancegunge to Soree has been metalled for 13 miles, and three-fourths of the earth-work on the next seven miles completed, and improvements have been made to the road between Rancegunge and Bancoorah, and to the Cuttack, Kendraparah, Puttamondoe, and Sonapoor roads. Five hundred and twenty miles of Railway feeders have also been either completed

or put in hand during the year, and extensive repairs made to the Grand Trunk Road, which was much injured by the heavily-laden cotton-carts.

The most important are the Burrakur and Shergotty. Burrakur bridge. Two 75 feet arches at the east end of the former have been completed during the year, and three of the nine 155 feet span iron girders placed in position. The pier foundations have progressed fairly. Six arches of the Morhur Bridge have been completed, and four others nearly so. A bridge over the Koodra, four arches, 45 feet, has been proceeded with; nothing has been done to the Booria bridge. Another large bridge on the Sowrah was commenced by the European contractors; a plate-iron bridge at Alipoor has been also built by European contractors.

Miscellaneous.—New lines of road leading to the site of the Outram equestrian statue have been laid out and commenced in Calcutta. The Scaldah Market has been roofed in, and a tank at Howrah begun.

NORTH WESTERN PROVINCES.

Buildings.—Two blocks of the public offices at Allahabad N. W. PROVINCES. have been commenced, and quarrying operations successfully carried on at Pertabpoor. The quarry will supply the buildings at a moderate rate. The masonry of the Commissioner's cutcherry at Meerut is finished, and 20 other buildings connected with revenue, either cutcherries or tehseels, have been completed or are in progress.

The foundations of the Memorial Church at Cawnpoor have been laid in, and stone has been dressed for the plinth. A church for the Presbyterians at Allahabad, the funds being provided partly by private and partly by Government subscription, is progressing favourably. Additions and alterations have been made to the churches at Dehra and Moradabad; a spire has been added to the Memorial Church at Futtehghurh; and the cemeteries at Nynce Tal and Morar have been enclosed.

The Cawnpoor Memorial has been finished.

Slight additions have been made to the Bareilly College Bareilly. and to the Etawah School.

The Agra, Bareilly, and Allahabad prisons have been considerably enlarged; additions made to cutcherries at Agra, Jhansi, Mozuffurnuggur, Bareilly, and Shahjehanpoor; and various slight additions made to the Police buildings throughout the Province.

Agricultural.—At the head-works it has been necessary to construct only four bunds this year for turning the Ganges into the canal-supply channel. That at Hurdwar was the first work of the season, consisting of 66,653 cubic feet of work. Two other bunds, entailing a lakh and a half of cubic feet of earth-work, were constructed at Bheemgoda, and a smaller one at Neeldara. By means of these bunds the supply in the canal was kept at an average height of 5.7 feet (which was as much as was required) on the Roorkee gauge, but a greater depth could have been obtained if necessary. There was no closure during the year. The repairs to the canal itself are therefore inconsiderable, but in the First Division, which includes the head-works above described, much work has been done. The gates at Myapoor have been repaired, and the regulating machinery completed: bunds to direct the course of the Ranipoor Rao to the super-passage,

N. W. PROVINCES.

and to divert the Putri torrent, have been put in order; the repairs to walls of mill channels executed; and ten lakhs of earthwork, rendered necessary by accidents on the Rutmoo, executed, and 20 lakhs of earth-work, comprising removal of bunds and excavations of cuts on the Solani River, completed. At the Asuffnuggur falls some minor repairs were completed, and a large collection of materials made so as to effect rapid work in case of closure. The Nirganjui lock-wall suddenly gave way, as also the ogee of a bay in the Jaolee falls. These were rapidly repaired. No new rajbuhās have been made, but 277 miles have been cleared of jungle and silt, and careful levels have been taken on other rajbuhās, and the beds staked across at fur-long distances. It was found necessary also to build a considerable bund to protect the town of Kunkul which was threatened by the Ganges. A survey of portion of the Ganges Khadir lands has been made with a view to the drainage and reclamation of a large area of swamp formed at the confluence of the Solani and Ganges.

Second Division.

In the Second Division several chowkies, both on the main line and on rajbuhās, have been completed or put in hand. The Jance escape has been cleared; 22 new miles of rajbuhās have been opened though not quite complete; 20 miles of old rajbuhās remodelled, and 12 miles of village water-courses converted into minor rajbuhās; the earth-work done amounting to about a crore and a half of cubic feet. Besides this 80 miles of the canal bank have been put in thorough order, and 706 miles of rajbuhās cleared of silt and weeds in addition to 26 miles of heavy embankments, involving 70 lakhs of earth-work.

Third Division.

In the Third Division the reconstruction of the Kana Kowa bridge has been the only work of any importance, but there have been extensive improvements to the irrigation by the remodelling of rajbuhās. In connection with this and the silt clearances, 111 lakhs of earth-work and nearly two lakhs of masonry have been completed during the year. Besides these works six first class chowkies have been put in hand, and two nearly completed.

Cawnpoor Terminal Division.

In the Cawnpoor Terminal Division the foundation of the Dunnahar wharf has been commenced. Half a lakh of earth-work was executed in connection with this work. The Cawnpoor docks have been completed, drop gates added to the last lock, and 113 miles of rajbuhās have been under construction, 89½ miles of which are finished, and the remainder progressing. In this work 216 lakhs of earth-work and two lakhs of masonry have been executed and in repairs and clearance 146 lakhs of earth-work and 15,000 cubic feet of masonry.

Etawah Terminal Division.

Very satisfactory work has been done in the Etawah Terminal Division: 66 small bridges have been built, three first class chowkies, one escape head, and nine minor works consisting of syphons, &c. Water has been passed over 41½ miles of first class and 52½ miles of minor rajbuhās: the earth-work involved in this and silt clearances amounted to 35 lakhs, and the masonry to two lakhs of cubic feet. Besides this, surveys, plans, and estimates have been completed for 75 miles of new rajbuhā channel, and bench-marks laid down in the beds of existing rajbuhās to a considerable length. On the

Futtelghurh branch the excavation, with the exception of N. W. PROVINCES. some bunds at present left for communication, is now complete. The Shahjehanpoor escape head nearly brought to completion, entailing 79,000 cubic feet of earth-work and 8,500 cubic feet of masonry. The Jutwara head widened, and 313 lakhs of earth-work and 55,000 cubic feet of masonry executed in completing 122 miles of rajbuhās. Silt clearances and repairs have also been effected to the extent of 38 lakhs of earth-work. Cuts have been made round bridges and falls, by which water instead of flowing by escapes into the Ganges, is economized for the canal plantations which have received considerable attention during the year.

In the Boolundshuhur branch the work was much delayed by the failure of the contractor's brick kilns. A fortunate discovery of block kunkur will partly obviate further delay. The Chukkerpoor and Ghoree Bridges, semi-ellipses of 36 feet span, have been completed; the Dadur aqueduct and Shurruckpoor falls completed. The foundations of three other bridges have been partially excavated, and of a fourth the masonry commenced, involving three lakhs of earth-work. Eight thousand cubic feet of masonry have been executed on bridges on the right branch. In the construction of rajbuhās 70 lakhs of earth-work and 7,000 cubic feet of masonry have been completed, 40½ miles of minor rajbuhās were constructed, and 1,50,000 cubic feet of earth-work and 47,000 cubic feet of masonry in constructing four new first class chowkies which are now complete. The roofs are iron girders with brick arches.

The Irrigation Works being as nearly complete as can be, the work has been confined to improvements and repairs, chiefly to falls and bridges, during the three weeks' closure in April. These were found to have suffered but little; the most important work was in connection with the Mundait and Lalaen bridges, the arches of which being unsound have been repaired, and as they were re-built with an increased height of four feet, the navigation has been benefitted. Drainage works have also been improved, others are in progress, and schemes for the drainage of many swamps have been furthered by the taking of levels.

The Rajpoor and Bejapoor water-courses have been improved, and Daghunwala Aqueduct repaired. These works entailed the execution of five lakhs of earthwork and a lakh of masonry. The important drainage of the Goseinwala and Jogeeewala swamps could not be advanced, owing to the scarcity of labour; all the workpeople procurable being employed on the still more important work, the Sooswa bridge on the Hurdwar Road, which has been completed. This work will be further described under "Communications."

The work on these has been greater than last year: labour has, however, been difficult to procure. On the Kylas Canal 36 lakhs of earth-work have been executed, and 14,000 feet of masonry in minor works. On the East Bygool Canal four lakhs of excavation and 1,500 cubic feet of masonry have been completed, a cut 4½ miles long made on the Kitcha River to utilize water, and the dam will be constructed before the rubbee of 1865.

N. W. PROVINCES.

Agra Irrigation
Works.

The works on these have been confined to completions to bridges and minor improvements, with the exception of three lakhs of excavation in extending the Burkhole main and branch canals. Thirty-eight lakhs of earth-work were excavated in improvement of the Kheyragurh Canal, and about a lakh of masonry was executed in this division.

Bundelkhand Works.

The most important work was the partial restoration of the Doodhal tank, Jhansi District.

Hurdwar.

Communications.—The Sooswa bridge, six arches, 50 feet span, has been completed. Great difficulties were experienced in laying the foundations, but they were successfully overcome by the immediate superintendence of the Superintendent, who encamped during the hot season on the spot, and the road is in consequence now open from Dehra to Hurdwar.

Agra.

On the Agra and Bombay Road, from the former city to Goona, 200 miles are now completely metalled, excepting a break at the Chumbul River. The Kharee and Ootungun bridges have been completed; the former a brick bridge, five arches, 62 feet span; the latter three arches of the same size. On the Dehra and Roorkee Road, 5 large and 27 small drain bridges have been completed, and six lakhs of metalling laid. The road stood the rains fairly.

Cawnpoor.

On the Cawnpoor and Malthone Road much has been done towards rectifying the foundations of the Pandoo Bridge, which are now nearly completed. This work was begun by the Civil authorities.

Rohilkhand.

The Rohilkhand Trunk Road has now 30 miles metalled, 17 miles of earth-work finished, and that of the remainder well advanced. The works have been undertaken by a trustworthy European contractor. The bridge (an iron suspension one) over the Jumna at Kalsee fell in, the abutments having been undermined by the rains of 1861. The eastern pier has now been built to a height above the level of the surface water in the river; the foundations of the western pier are excavated. Towards improving the approach to the Allahabad bridge-of-boats little has been done, owing to difficulty in settling the compensation of house-owners. Metal has been collected for widening the Trunk Road within this station. The reconstruction of the Hindun bridge is in abeyance. The important road between Matraas and Kutchla Ghat, which connects Rohilkhand with Agra and the countries beyond, is now in an advanced state. Of the 28½ miles which lie in the Allygurh District 14 miles are bridged and metalled; of seven the earth-work is completed, and the remainder is in progress. To the 26 miles in the Etah District little has been done, owing to the failure of the contractor. This portion of the line will be difficult to construct. This road, it is hoped, will stimulate the growth of cotton in Rohilkhand. Iron work for the lattice girder bridge, included in the project for a high-water escape at the Hindun, is being constructed in the Roorkee Iron-yard. Two arches are being added, and the roadway widened of the Begum's bridge, Meerut. The Allahabad and Fyzabad Road, 23 miles in length, is, with the exception of two small culverts, now complete up to the banks of the Ganges. Fourteen miles have been metalled during the year, and a bridge three 10-feet arches and some

Allahabad.

Hindun.

Allygurh.

Meerut.

minor works built. The Sohagee Pass Road, 26½ miles in length, is now complete, with the exception of 10 miles of metalling; nine miles of metalling have been executed during the year; but for the difficulties with the contractor, the work would have been entirely finished. A lakh of Rupces has been spent on the bridges between Mirzapoor and the Kutra Pass on the Great Deccan Road. Some necessary modifications on the original designs have somewhat delayed their progress, but nine bridges—including one of three spans of 25 feet, one of two spans of 15 feet, and single arched bridges varying from 25 to 50 feet—have been completed or are in progress; and material for three larger bridges—the Lallgunge, one span of 40 and two of 25; the Scottee, five spans of 40 feet; and the Hurrye, three arches of 50 feet span—has been collected. The bridge over the Kahlee Nullah, between Futtchpoor and Banda, has twice failed—on the last occasion owing to the subsidence of the piers. The piers of a new iron girder bridge are now constructing; the work is progressing favourably. The stone bridge over the Susie Nuddee, on the Banda and Saugor Road, has not progressed favourably, owing to neglect of the contractor's agent. A new agent has been sent and the arch work has been started. This bridge has four arches of 25 feet, and three arches of 12 feet span. Of the 36 miles of road from Bareilly *via* Bareilly, Buheree, to the sanitarium of Nynee Tal, 23 are now metalled and two more nearly so; 14 miles of these is the work of previous years. A masonry bridge of five arches is in progress over the Jooa Nuddee on the Budaon and Bareilly Road, to replace the timber bridge which was carried away last year.

Of the Aril Nuddee Bridge on the Budaon and Shah-jehanpoor Road, the piers have been raised three feet, seven arches turned, and four embankments added. In the Benares Division a great part of 78 miles of important roads have been improved by metalling, and metal has been collected for the remainder. The present road between Mussoorie and Jaunsar Pergunnahs, in the Dehra Doon, is more a bar to, than a means of communication. A new road has been projected, and of this three miles, 10 feet wide, and 12 miles of path, have been opened. The trussed timber bridge over the Tonse on this line is progressing; the iron work is ready. The piers of the Bindal bridge, which completes the communication between Dehra and the Government Tea Gardens, are now complete.

In the Mynpoory District the Furruckabad and Etawah Road, 20 miles long, has been widened and metalled, and for 12 miles of the Shekoabad and Etah Road nearly the whole of the earth-work completed. The earth-work of the Dabceapoor Road, connecting the Etawah Railway station with the Jumna, is complete; and the sinking of 46 wells for the foundation of the Chickowlee bridge, three arches of 60 feet, is in progress. Eight miles of the Bhind Road, Etawah District, have been consolidated. Wing-walls have been added to the Seyngur Nuddee bridge, Etawah District. This road was originally a district road, and the bridge was designed by the Collector. Besides these works minor roads have been improved, and some small buildings for the accommodation of travellers and inspecting officers are complete or in progress.

Mirzapoor.

Saugor.

Bareilly.

Benares.

Mussoorie.

Furruckabad and
Etawah.

N. W. PROVINCES.

Contracts.

Miscellaneous.—The contract system continues to be encouraged. Success and failure have in large contracts been about equal. In small contracts the success has been general throughout the Department. The greatest success with contracts has been in the 2nd Circle.

PUNJAB.

Buildings.—A Custom House is in progress at Delhi, some new tehsels have been built, and the roads of the Salt Range improved.

The Lunatic Asylum at Lahore has been converted into public offices, and a few alterations have been made to other public buildings.

Scientific.

Museums have been projected for Umritsur, Lahore and Mooltan, and one has been completed at Sealkote.

Hospitals and dispensaries.

Hospitals and dispensaries have been built at several stations.

Delhi.

Some of the Royal buildings in and about Delhi and Lahore are being restored, and an attempt has been made to re-construct the black stone elephants found in Delhi Fort. A small sum has been spent in archaeological researches at Eusafzye, and in photographing ancient coins at Peshawur.

Lahore.

Some new public buildings at Delhi, Umritsur, and Lahore, among others, a Local Museum at Umritsur and the John Lawrence Hall at Meean Meer, are in progress. The Exhibition building at the last place is now used for public meetings, &c.

Umballa Church.

St. James's Church, Delhi; St. Paul's, Umballa; the churches at Simla, Jhelum, and Dera Ismael Khan, have been either enlarged or beautified during the year; and new churches are either completed or approaching completion at Kangra, Dalhousie, Mooltan, Abbottabad, Attock, Nowshera and Sheikhooddeen, Bunnoo. Mr. Aratoon, an Armenian resident at Lahore, has generously presented a clock to the Anarkullee Church. The Roman Catholic Chapels at Subathoo, Umritsur, and Peshawur are being improved. The cemeteries at Umballa, Kussowlic, Mooltan, Peshawur, and at the battle-field of Chillianwalla have been enclosed and beautified by the planting of trees, and the burial-places at encamping grounds generally, surrounded with fences.

Mr. Aratoon.

Mr. Aratoon, an Armenian resident at Lahore, has generously presented a clock to the Anarkullee Church. The Roman Catholic Chapels at Subathoo, Umritsur, and Peshawur are being improved. The cemeteries at Umballa, Kussowlic, Mooltan, Peshawur, and at the battle-field of Chillianwalla have been enclosed and beautified by the planting of trees, and the burial-places at encamping grounds generally, surrounded with fences.

Peshawur.

Additions and improvements have been made to the Lawrence Asylum, Sunawar, and to the Military Normal School, Kussowlic. The Delhi College is to be located in a wing of the Institute Lawrence Asylum and seven town, seven tehsels and 223 village schools have been built, or are in progress. Several cutcherries are completed and in progress, and a grant has been made for a reformatory Farm in the Sealkote District for the reformation of the Sansee robber tribe.

Madhopoor workshops.

Arrangements have been made to work the new planing machine at Madhopoor by water-power. The water-wheel to work the whole of the machinery of the workshops has not yet arrived from England. The punching and shearing machines though worked by manual labour have proved useful. A temporary foundry has been begun and will be ready for making small castings before the end of the ensuing year.

PUNJAB.

Agricultural.—The heavy floods during July caused much damage to the head works of this canal, and at the same time deposited so much silt above the regulator as to make the repairs very difficult. Floods in December and January made a similar deposit. To prevent a recurrence, this channel has been contracted by a paved spur.

The rajbuhars have been considerably extended, 149 miles having been opened during the year, and 101 miles are in progress. The 4th Division of the canal has the greatest number of miles opened, but it is not clear whether the whole mileage mentioned was executed this year or not. In the 2nd Division 35 miles of rajbuhars have been completed. The rajbuhars now in progress in the 1st Division would have been finished but for the illness and consequent departure to England of the officer in charge. The area irrigated in the 4th Division alone has increased from 61,837 *kunals* in 1862-63, to 1,99,208 *kunals* in 1863-64.

Other works in connection with the regulator at Madhopoor, and locks on the irrigation channels have also been executed, and it has been found necessary to spend much money on the first four miles below the Aliwal regulator, which is loose sand, and in flattening the slopes of channels through *reh* land.

On the Upper Sohag Canal 12 miles of new channel have been made, and 6 miles of old cleared; 12½ miles of rajbuhars have been put in hand, of which 5½ miles are completed, and the excavation of the remainder finished. Some bridges and minor works have also been constructed. The Khanwah Canal and its rajbuhars have been cleared and repaired, and some minor works done on the lower Sutlej Canals. Half a lakh of Rupees have been expended on the extension and widening of the Manka Canal, equal portions of which were paid by the Lugharee Chief Jumal Khan, and Government. The portion of the Kootub Canal to be executed by Government has been finished, and the zemindars' portions nearly so. The Shoria Shumba-wala Canal has been widened, and the remaining 17 miles of the Mussoowah Canal, which were begun last year, finished, and the canal opened. Some works on other minor canals have also been completed.

The new channel between Indree and Boodakhera has been nearly completed, and the masonry of the rapids is in an advanced state. A new cut for the Bowanee escape has been made, which relieves the present escape and drains the country. Dams for reservoirs have also been constructed in the Delhi and Goorgaon District so successfully as to bring 6,000 beegahs under cultivation which were formerly barren and covered with *reh*.

Two dams have been made in the Rawul Pindee District, one two miles long which holds up the water to a depth of 30 feet.

The great inundation bund at Kala on the Indus has been added to. A new bund at Shah Jumal built, and the bund for the protection of Dera Gazee Khan originally made by the zemindars, taken over by Government and improved.

1,500 beegahs have been drained in the Goorgaon District, and the Nujjufgur Jheel Channel improved. The Kahnawan Jheel in the Beas Valley is being drained, and

PUNJAB.

Trunk Road, Delhi
and Lahore.
Ferozepoor.

a preliminary report, having reference to the storing of water and the irrigation of the country between the Chenab and Ravee has been prepared.

Communications.—On the Trunk Road between Delhi and Lahore there have been no works of importance; the Sutlej embankment between Ferozepoor and Lahore has stood well, though severely tried during the rains. The communications at unbridged rivers have been kept up as usual.

Lahore and Peshawur.

The road is now metalled to a width of 12 feet in all, a few portions in some places to a greater width, and where slate shingle is abundant to nearly the whole width of the road. Work has been carried on vigorously during the year. Between Jhelum and Rawul Pindee 65 miles of first coat of metalling, 50 of second, and 38 of third have been completed. The bridge at Deena Nullah, 10 spans of 40 feet, is well advanced; the Bukrala bridge, 12 spans of 40 feet, approaching completion; and the Sohan bridge, 15 spans of 63 feet, has foundations and flooring one-third completed, and the superstructure of an abutment and five piers begun. Between Rawul Pindee and Peshawur the Vah Nullah bridge, an oblique timber bridge with masonry abutments, nine spans of 25 feet, has been opened. Another timber bridge (the Hurro), 10 spans of 40 feet, has been opened at 204th mile. A skew bridge over the Gondul Nullah, five spans of 40 feet, has been opened. The Khyrabad Nullah bridge (size not mentioned) is open for traffic, and the nine smaller bridges previously opened have been completed. 49 miles of road have also been metalled.

Umballa and Kalka
Road.

The whole of this road, with the exception of five miles, has received the second coat of metal, and the gradients are being improved.

Jullundur and
Hooshiarpoor Road.

The Jullundur and Hooshiarpoor Road has been embanked and metalled.

Umritsur and
Puthankhote.

Thirty-six miles of the Umritsur and Puthankhote Road are now metalled: 24 of these have been this year's work. The foundations of three piers of the Parmanund bridge have been sunk and some culverts built.

Roads executed from
Local Funds.

At the cost of the Local Funds, roads in the districts of Delhi, Umballa, Loodiana, Sealkote, Mooltan, Gogaria, and in some of the principal stations have been metalled.

Unmetalled roads,
Attock.

The chief new road is one 85 miles long between Attock and Mukkad on the Indus, the terminus for steamers: eight miles of this are to be metalled. Roads have also been opened in the Rawul Pindee and Gogaria District. These last, 10 in number, are feeders for the Railroad. The roads in the other districts have been improved—that in the Derajat country for the purpose of opening up the Bar, and the east road between Rawul Pindee and Hazara, have been completed, with a width of six feet in the hills and fifteen feet in the plains.

Hill Roads: Hindustan
and Thibet Road.

The work on the Thibet Road has been somewhat delayed from the difficulty of procuring labour, and the inclemency of the weather, but 32 of the 51 miles between Serahun and Cheence, part of which encounters great cliffs, have been opened. Two bridges at Nagree and Mungrad, of 68 and 56 feet span, which were destroyed last rains, have been replaced, and the wooden bridge crossing the Sutlej at Wangtoo and the Wangar (a tributary of the Sutlej), the one 120 feet in one, and the other 140 in three spans, have been opened for traffic.

PUNJAB.

The 50 miles of the Kooloo and Ladak road between Sultanpoor and Koksar, with the exception of 3 over the Rotang Pass, are now open, 46 having been completed during the year. The important link, the Koksar bridge, which supplies a permanent crossing of the Chandra (Chenab) River, has also been opened, though not quite completed; a severe snow-storm, which set in on 25th October, stopped the work, and several lives were lost, the Assistant Engineer escaping with difficulty.

The widening of the road to 20 feet between Rawul Pindee and Murree is complete to within six miles of the latter place. The road from Murree to Kohala, 20 miles in length, is complete, and the suspension bridge at Kunni Nullah in progress. Two hundred European Soldiers opened out four miles of the Murree and Abbottabad Road during the rains. Seven miles of the Hazara Trunk Road have been widened, and the Hazara frontier communications improved, and in the Salt Range 27 miles of road and 108 miles of pathways for patrolling purposes constructed.

Of the Markunda bridge, which is the principal of those in progress, 17 piers and the north abutment have been built. Twenty-four piers and both abutments are now complete; 230 wells have been sunk for curtain wall foundations; the works were retarded by unusual floods in October.

The abutments and wing-walls and five piers of the Guggur bridge have been completed, and 77 foundation wells built, sunk, and filled in. The foundations for all the piers of the Mootasoottee bridge have been completed, and the piers are in progress. The Tangree bridge could not be proceeded with owing to the want of supervision. A small bridge over the Tangra River, 7 arches, 12 feet span, has been built at Umballa, and a queen post girder bridge, 53 feet, at Cheitroo. A laminated timber arched bridge, 75 feet span, over the Guj near Aik near Sealkote on the road from Bunnoo to Koorun, and spans of 40 feet, over the Ravee near Lahore city, is near completion. Some small bridges have been constructed over the near the Goomuttee post which is between Bunnoo and Dera Ismael Khan; 30 foundation wells have been sunk and six piers built of the Toot-ke-Gurhee bridge. The boat bridges have been kept in order as usual, and nearly 400 ferries kept up.

Dak bungalows and serais have been built in several places, and other serais improved where necessary. The water-supply for travellers has also been increased; that in connection with the Nicolson Monument is progressing.

Miscellaneous.—Some rock has been removed to improve the navigation of the Indus.

Experimental drifts have been commenced for the excavation of coal in the mines of the Salt Range, which are some 10 miles from the plains, and the seams of which are at a high inclination. These mines, which have been reported on by Dr. Oldham of the Geological Survey, have furnished coal that has been successfully employed on the Lahore and Umritsur Railway.

The Municipal Committee has taken advantage of the Baree Doab Canal water to convert some irregular ground outside the city walls at Lahore into a garden.

PUNJAB.

Extensive improvements have been made at Delhi in paving, and general improvements in paving, lighting, drainage, and the erection of markets, town-halls, and the improvement of roads, at 27 other towns in the Punjab. The Nicolson Memorial in the Margulla Pass is in progress under the direction of Lieutenant Colonel Taylor.

S. SETTLEMENTS.

Singapore Church.

STRAITS SETTLEMENTS.

Buildings.—St. Andrew's Church, Singapore, has been completed, with the exception of finishing off the upper portion of the tower. No other works of importance.

Agricultural.—The drainage works, North Province, Wellesley, were much extended, and a large area of land has thus been made available for cultivation. Some useful drainage works were also carried out in the Malacca District at Pulo Gadong and Ayer Mulie.

Communications.—A new road, seven miles long, was made in Singapore, opening out a large tract of country to the west, and a bridle-path was carried six miles farther to the west coast of the Island. These will, it is hoped, prove useful and encourage squatters to settle in the country. In Malacca also much was done in opening out roads. The two coast roads running north and south, *viz.*, from Punkalan Bala to Linghy, and Marlino to Kassang, made good progress, and will, it is expected, be finished this year. About 70 miles of bridle-paths were also opened up through the Forests.

At Singapore the Municipal Commissioners erected a new wooden bridge 270 feet long, across the Singapore River, besides one for foot passengers, 320 feet long, near its entrance.

River Wall, Campong, Malacca.

Miscellaneous.—This work, which has pile foundations, is being executed by convicts. The soil is shifty and the work tedious and difficult.

Fort Canning.

Two parabolic reflectors have been fixed to the Flag Staff, Fort Canning, as harbour lights. The light was seen a distance of from 13 to 15 miles.

New Harbour.

Granite beacons have been substituted for wooden ones on the shoals in and about New Harbour. They are conspicuous at all tides.

Malacca.

Four masonry beacons were also erected at different places in the Malacca Harbour for the first time. This has been rendered desirable by the increase of shipping during late years.

Singapore.

Dalhousie Pier, Singapore Town, has been lengthened 40 feet, which enables passengers to embark or land at all tides. The town is now lit with gas.

C. PROVINCES.

CENTRAL PROVINCES.

Jubbulpoor.

Buildings.—The District Court-house at Bhundara has been completed: those at Raepoor and Wurdah have been commenced. Tehseels and other revenue buildings have also been constructed or put in hand in the Jubbulpoor and Chindwarra Districts. The two central jails at Raepoor and Nagpoor have been proceeded with; the progress has not been great. Police buildings have been commenced at Sumbulpoor and Sironcha, but many more buildings of this nature are required.

C. PROVINCES.

Two dispensaries have been erected at Nagpoor; a store-room at Tabling has been converted into a Lunatic Asylum; and the Sironcha Civil Hospital and staging bungalows which were begun nearly completed. The Educational buildings in these provinces have been kept apart from the Department of Public Works Budget.

Church-building has commenced during the year at Chindwarra, Raepoor, and Hooshungabad, and slight progress has been made. Additions have been made to the Seetabuldee Church, which was opened in the previous year, and the new cemetery at that station has been finished.

Agricultural.—The valleys of the Kanhan and Pench Kanhan Rivers have been examined. It has been determined that water may be stored in them and a similar inspection of the Wynegunga Valley shows that an artificial lake may be formed in it.

Plans and estimates have been submitted for works on the 1st and 2nd barriers of the Godavery Irrigation Works. These include anicuts at both barriers, and locks at the first also. On the first anicut three lakhs cubic feet of masonry and 98 lakhs of excavation have been done, progress which the Superintending Engineer terms "most unsatisfactory." The anicut is more than half finished, the canal one-third excavated. Establishment buildings have also been completed in the 1st Barrier Division, and arrangements made for drainage.

In the 2nd Division no navigation works have been constructed, but estimates for them have been in preparation and are in an advanced state.

Communications.—Of the northern road which connects Nagpoor and Mirzapoor, the 1st Division extends from the latter place and the Nerbudda, 200 miles. This has for some years been complete except as to bridging, the want of which makes it nearly useless in the rains. A lakh of Rupees has been spent on these, but at that rate it will take four years to perfect this important communication. The Commissioner suggests that all the bridges should be rapidly pushed on except that over the Hirrun River, which might be left for the present. The principal works carried on have been the Tonse and Kutnee Bridges, which are of five arches of 50 feet, and five arches of 45 feet span, respectively. Owing to springs in the river beds, and want of efficient pumping apparatus, their foundations have caused much trouble. Of the latter bridge one pier's foundation is finished, and that of another nearly so; of the former the north abutment and wing walls, and piers Nos. 1 and 2 have been built up to the spring of the arches; the south abutment and wing wall foundations nearly finished, and the foundations of No. 3 pier excavated. Besides the above, during the year four bridges of three arches of 15 feet span have been built to springing, and one bridge, a single arch, 20 feet span, has been completed.

In the 2nd Division, which extends from the Nerbudda to the Koorae Pass in the Sautporee Range, 42 miles of the road are, with the exception of 3,000 feet, entirely finished as to earth-work; and beyond this at intervals there are six miles more of earth-work in all complete, and 93 miles in all of measuring, between the 1st and 101st mile. The most important bridge, the Wynegunga, 12 arches of 50 feet span, has been

C. PROVINCES.

finished, so as to be open for traffic. One skew bridge, a single span of 45 feet, has been built, and another is well advanced. From the Wynegunga to Seeonee all the larger bridges are complete, and several minor bridges have been begun or executed. On this division $2\frac{1}{2}$ lakhs of Rupees have been spent during the year.

Koorai.

The third division extends from Koorai to Nagpoor. The most important work is the bridge at Kamptee over the Kanhan River. It is similar to the Wynegunga bridge. The north abutment, and piers Nos. 10 and 11 were completed last year; 50 wells for foundations have been sunk and nearly finished during the year, and 42 curtain blocks on the down side continued. The Puchdar bridge, six arches of 30 feet span, has been begun, and the foundations are nearly complete, and 15 other bridges from three arches of 30 feet span downwards either entirely constructed or nearly so. Nearly a lakh was spent in this division; the whole amount expended during the year on the three divisions being five lakhs of Rupees. The importance of that part of the road between the two Railway termini, Nagpoor and Jubbulpoor, is great, and it is hoped that during the year 1865 the whole may be complete with the exception of the bridging of the Nerbudda River.

Raepoor.

The eastern road as now under operations extends eastward, from Nagpoor to Raepoor, a distance of 200 miles. Progress has been "less satisfactory" than on other main roads. For the first 60 miles from Nagpoor the road is nearly complete, and the bridging, save of two large rivers, the Kanhan and Wynegunga, entire. There is a gap of 80 miles which is being surveyed, and of the last 60 miles to Raepoor the road is under operation, and in some sections nearly complete.

Hingunghat.

The southern road consists of one main line from Nagpoor past Hingunghat, the cotton mart in the Valley of the Wurdah, 100 miles in length, and of branch roads in the Wurdah Valley. From Nagpoor and Hingunghat the roadway and lesser bridges are nearly complete. Two important bridges, those over the Wunna River, and three smaller ones, are not commenced. If money be available, the whole work, with the exception of the Wunna bridges, might be finished by the end of 1864. The branch roads in the Wurdah Valley aggregate 75 miles, of which the earth-work was finished last year. This year the bridging has been finished for 15 miles from Hingunghat towards the Wurdah River; the metalling remains to be done. Besides these large roads 305 miles of Railway feeders have been projected during the year. Some of these were surveyed and begun by Local Committees, but were eventually handed over to the Public Works Department employed on the Southern Road. Other roads have also been under the operations of Local Committees, and a rough project for connecting Nagpoor with the Eastern Districts by means of a tramway has been prepared and submitted to Government.

Wurdah.

Miscellaneous.—The swamps near Jubbulpoor have been drained, and some minor works executed.

BRITISH BURMAH.

BRITISH BURMAH.
Custom-house, Rangoon.

Buildings.—Bonded Ware-houses and Custom-houses at Rangoon and Bassein have been completed or are in progress, and the Revenue buildings at Moulmein enlarged.

A lakh of Rupees has been spent in completing a Post Office at Moulmein, and in pushing on the public buildings at Rangoon. The masonry of the basement story has been completed. Post Office, Moulmein.

Trinity Church at Rangoon has been roofed in, and is so far advanced that it is hoped it will be ready for use in 1864-65. At Moulmein St. Matthew's Church was repaired and improved, and a Roman Catholic chapel built in cantonment.

Minor Police buildings have been erected at Moulmein and Rangoon, and repairs made to the existing buildings throughout the Province.

The Court Houses at Akyab, Thayetmyo, and Mergui Court House, Akyab, are either completed or approach completion, and buildings at Moulmein and other stations have been repaired.

The jail buildings at Rangoon were begun: those at other Jails, Rangoon, stations have been delayed, pending Government sanction.

Agricultural.—The great main and flank embankments in the Myanong District (the first work of the kind in Burmah) was virtually completed during the year. The total length of embankment completed exceeds $8\frac{1}{2}$ miles, and has been executed very creditably in spite of considerable difficulties. The land reclaimed is already of some extent, and more will eventually be brought under cultivation. Other embankments could not be undertaken for want of a sufficient staff of officers.

Communications.—Considerable progress was made in the development of roads in various parts of the Province. Roads. On the Prome and Pounday Road 13 miles were metalled and culverts constructed. On the Prome and Meeaday Road $6\frac{1}{2}$ miles with culverts, and $3\frac{1}{2}$ miles of the Prome and Natoleen Road were completed and metalled. A project for a road to Tapoon has been prepared. The roads in the vicinity of Rangoon were improved, and 30 miles of road towards Prome so far advanced in earth-work and bridging as to induce hopes of its entire completion by the end of 1864. From this point the branch line towards Shoaylyeen and Tounghoo as far as Pegu, a distance of 36 miles, has been surveyed, levelled, and staked out. Some earth-work was executed on the Rangoon and Tamain Road, and timber bridges were erected.

In the Tenasserim Division considerable progress was made in opening out the Yeh Road, which is metalled as far as the Sacred Lakes, nearly 19 miles from Moulmein. Beyond this point the earth-work formation has been effected as far as Quanlah, a distance of $18\frac{1}{2}$ miles. Inspectors' bungalows have been constructed, and the branch line from Quanlah to Amherst, $17\frac{1}{2}$ miles, traced out and cleared. A reconnaissance has been made of the country towards the Shan Frontier as far as Meeaday, about 130 miles from Moulmein, and a general route selected.

A lakh and a half of Rupees was spent on the Pyne Kyun Navigable canals. Creek communication between the Pegu and Sittang Rivers, and the result was a reduction in length of navigation from 33 to $18\frac{1}{2}$ miles, and a general deepening of the bed of the channels. New villages have sprung up in the vicinity, and cultivation has been much extended.

Miscellaneous.—The progress of the main jetty and bazar pier at Akyab was somewhat retarded owing to local difficulties, but it is hoped that both will be finished during the present year.

BRITISH BURMAH.

Prome.

Permanent bazars have been constructed or are in an advanced state at Prome, Thayetmyo, Shoaydoun, Akyab, Mergui, and Amherst.

Town improvements,
Rangoon.

Twenty lakhs of cubic feet of earth-work have been executed in connection with the improvements to the town blocks of Rangoon, and much has been done for the improvements of the roads and sewerage in that town and also at Akyab, Bassein, Prome, and Thayetmyo.

Alguada Reef Light-
house.

The important Alguada Reef Lighthouse is now nearly complete. Fifteen days' work will entirely finish the masonry. During the season under review 1,600 tons of granite were landed on the Reef, and raised and set in the building which has thus risen 95 feet, or from 36 feet at the beginning of the year to 131 feet its present height. The actual work done falls short of the expectation by only 4 courses, in all 4 feet 3 inches, and this is due to an unusually heavy storm on the 2nd May. Of the 1,600 tons of stones landed only three stones were lost. It was hoped that the building would be completed and lighted by January 1865.

Double Island.

The Double Island Lighthouse works are also progressing very creditably, and it was hoped that the whole of the masonry would be completed by November 1864, by which time the lantern and apparatus were expected from England.

Cocos Lighthouse.

With regard to these works, preparations have been made for a fair start in the season 1864-65, and it is anticipated that the light will be set up about January 1866.

Contracts.

The contract system has been greatly extended and with favourable results, and everything tends to show that it will prove a success when properly introduced. It is suited to the character of both the foreign and indigenous population of the Province, and as confidence is acquired and experience gained, it may safely be predicted that works of great magnitude and importance will readily be contracted for.

OUDH.

OUDH.

Dahamow.

Buildings.—Opium godowns and dwelling-houses for the officers have been constructed at Dahamow, Fyzabad, Oonao, and Sultanpoor, and a post-office built at Seetapoor. One police station and seventeen posts have been begun and finished.

Seetapoor.

The cutcherry at Seetapoor has been nearly finished. At the beginning of the year the foundations were on a level with the ground. Another cutcherry at Oonao was delayed in construction owing to the lateness of the Government sanction, and the absence of a supply of materials immediately after the rains for the burning of bricks.

Lucknow Jail.

Two circles of the Lucknow Jail are now complete; the second was built during the year. The jail at Seetapoor is almost finished, and little remains to be done to that at Fyzabad, on which during the year great progress has been made.

Bareilly.

Fyzabad.

Communications.—The road from Dahamow to Roy Bareilly is now complete according to the present intention. The whole has received one coat of kunkur, and $9\frac{1}{2}$ miles a second coat. The earth-work of the Fyzabad and Gondah Road is complete. Some modifications have been made in the embankments. The metalling of the first and second sections

OUDH.

is three-fourths completed. The Tehree bridge will not be commenced until the success of the embankment across the flood lands has been tested. Of the road from Lucknow to Fyzabad, in all 101 miles, the main line, 78 miles, with the exception of the Kulleanie Nuddee bridge (the design of which is Kulleanie under the consideration of Government) is now complete. The branch line to Byramghat is also complete with the exception of a bridge over the same river, the well-sinking of which is in progress. The Fyzabad and Allahabad Road is 72 miles long; the earth-work and metalling are nearly complete, and wells have been sunk for the foundations of the Tonse bridge. The Biswee, Kerowee, and Kunesta Biswee bridges, it is hoped, may be commenced after the rains. During the last rainy season the Sye bridge was washed away, but the Goomtee bridge stood fairly.

The length of the Lucknow and Seetapoor Road is 25 Seetapoor miles; the earth-work is nearly ready. Twenty-seven miles of this were executed during the year. The 12 miles of road nearest to Lucknow have been metalled, and 33 small bridges completed; three-fourths of the entire number are now finished. Two large bridges over the Gond and Belwa have yet to be constructed. The original bridge over the latter river was washed away in the rains, the water-way being insufficient. The Lucknow and Cawnpoor Road has been kept in good order.

Surveys are in hand for first class unmetalled roads between Byramghat and Nanpara, and between Seetapoor and Baraitch, and similar roads have been under construction between Lucknow and Sultanpoor, and between Lucknow and Roy Bareilly. The latter is complete; the former nearly so. Besides these, 91 miles of minor roads, with 26 bridges, have been constructed, and other roads marked out.

With a view to opening out the waste-lands of Mohumdee, River Gogra, a careful compass survey with soundings has been made of 136 miles of the Gogra, and 76 miles of the Sarda. The Sarda has been proved unnavigable for ordinary steam-boats, but it is hoped that the Gogra may without much difficulty be made available for such vessels.

Miscellaneous.—The paving and sewage have been improved in Lucknow.

MYSORE.

MYSORE.

Buildings.—Cutcherries have been either finished or are in progress in the divisions of Bangalore, North and South Ashtagram, and Nuggur. Some of these suffered severely during the rains, and the damage had to be repaired. A few unimportant works were executed in the North Ashtagram, and Chittledroog Divisions. Three school-houses were finished in the Bangalore Division. One was commenced at Chittledroog, but stopped, and there was unsatisfactory progress on another in North Ashtagram. A lakh of Rupees was spent during the year on the Bangalore Jail, which, it was expected, would be ready for use by the 1st August 1864.

Agricultural.—In the Bangalore Division an estimated increase of Rs. 3,000 revenue has been effected by spending Rs. 5,000 on the anicut across the Mulloor River, and thus Mulloor more effectually supplying the Mulloor and Puttle Tanks. Unprecedented floods prevented the completion of the Mud-

MYSORE.

Coodloor.

door anicut in South Ashtagram, but the Anchay aqueduct and Cullaay tank and feeder were finished. Little progress was made with the Coodloor and Kistnaraj dam, North Ashtagram, but two new aqueducts were all but finished, and another aqueduct and two tanks begun. In Nuggur the Hulsoor anicut was completed, and some work executed on the Brumasamoodra dam. The Durmamboody tank, which is the main water-supply for 36,000 people, was much improved.

Bangalore.

Communications.—A lakh of Rupees were spent under this head in the Bangalore Division. The Dodabalapoor and Jungumcottah Road, 20 miles, progressed steadily. The road between the former place and Bangalore, 33 miles, which will be very useful for conveying timber was, however, delayed by cholera attacking the workmen. On the new direct road from Bangalore to Maugady, 28 miles, some not very sound or expeditious work was performed by contract. It was hoped that this and an extension of 14 miles might be finished during the year 1864-65. With the exception of the short line from Marmootal station to Boodicottah, all the Railway feeders to the eastward were completed in a very satisfactory manner; some useful works were also executed in the immediate vicinity of Bangalore. The sparseness of population, the unhealthiness of the district, and a necessity for revised estimates, have caused delay in the completion of the improvements on the Mysore Manantoddy Road, which have however been carried on during the year. The Muddoor Scevasamoodrum Road, 26 miles, is all but finished, and, though not fully bridged, is quite trafficable except for a very few days in the year. This road, besides its general utility, opens a communication with the Cauvery falls. In North Ashtagram, the Bhoond Ghât Road has progressed satisfactorily, and the excavation and preparation of the road is nearly complete to a width of 18 or 19 feet except in one part, (the Devil rock) where such a width would be dangerous, and the 16 or 17 feet width has therefore been adopted. The gradient of the road is less than on any of the Ghâts on the western road. The Madras portion is also nearly finished, and this important work should be opened by the end of 1864. A two arched bridge (span not mentioned) on the Bhoond Ghât Road nearly completed, and another bridge begun. The bridges and drains on the Myasundra Road have been nearly completed, and similar work has been put in hand on the Shemogah Road, and a three arched bridge completed on the Mangalore road; minor building shave also been executed or begun, but cholera and sickness has caused considerable delay in all these works. In the Nuggur Division the Benki-poor Doomee Road is nearly ready. The Anantipoor and Theerthully road almost complete; but the unconquerable difficulties of small supply of labour and unhealthiness of locality have prevented the execution of much work. In Chittledroog 33 miles of road were opened out, and in these and the former division minor accessory buildings put in hand. Besides these works, 450 miles of Imperial, 554 of Provincial, 709 of District, and 153 of Cusbah Roads, making a total of 1,867 miles of communications, have been maintained in good order during the year.

Coorg.

On the Mercara Coadlipett Road, 45 miles in length, 2½ miles were opened out to four yards in width, and the

MYSORE.

whole line made passable for carts; temporary bridges were renewed, and causeways across two rivers constructed or extended. The first step towards a direct communication between Mercara and Munzerabad has thus been taken. Minor works have been executed on the Mysore Cannanore Road, and 100 miles of communications; in all repaired the Periambad Ghât road is still in a "distressing condition" owing to the unusual rain-fall.

Miscellaneous.—Attempts have been made to carry out Contracts. the contract system both in repairs and original works. From sickness and want of sufficient supervision and labour, not very successfully however. But the Chief Engineer believes that these causes are remediable, and that the system will yet be found to answer.

HYDERABAD.

HYDERABAD.

Buildings.—Out of an allotment of Rs. 32,000, about Rs. 26,000 were expended in the jail under construction at Akolah. The completion of the jail at Akolah has, through a variety of causes, been delayed, but subsidiary buildings have been begun.

Communications.—One hundred and eighty miles of fair-weather roads in Berar, north of the Nagpoor Dak line, intended to serve as feeders to the Railway, have been opened out (except 30 miles of the Kamgaum and Maikur Road) at an average cost of Rs. 70 a mile.

This road was commenced after the monsoon. The work was limited principally to the portion between Budneira and Oomrawuttee, which will be first class on account of the heavy traffic between the latter town and the Railway Station. This portion (7 miles) is nearly completed; the remainder of the road is open for fair-weather traffic, with a few of the smaller bridges built.

The scarcity of labour and failure of contractors prevented the completion on the Akolah and Akote Road, 32 miles; the earth-work and metalling for 29 miles have been completed; 33 bridges and culverts built.

About seven miles of the road have been raised and metalled; 11 bridges and some culverts have been completed, and three bridges are in progress.

The progress on the road has been unsatisfactory; ten miles of earth-work have been completed and some metal collected.

Twenty-seven miles have been cleared and marked with side trenches; 32 masonry works built, and four are in progress. The Maidsee Ghât has been improved and made passable for traffic.

This road was not commenced till January 1864, owing principally to absence of the supervisor and neglect of the contractor. The progress is small, six miles of earth-work are in hand.

This road, only 900 feet in length, was required to connect the Railway Station at Mulkapoor with the high road. It has been completed.

This line, an important railway feeder, is complete for six miles as a first class road; the remaining 14 miles have been bridged and moorum laid for five of them.

HYDERABAD.

The metalled road between the military stations of Jaulnah and Aurungabad has been much improved by bridges. Eight have been virtually completed during the year. Some travellers' bungalows have also been built or commenced on the Hyderabad and Nagpoor Road.

RAILWAY.

MADRAS.

MADRAS.

South-West Line.

There is no report by the Consulting Engineer to Government in the Railway Department from this Presidency. The statements by the Agent of the Railway Company are simply forwarded as they stand, so that it is not known whether the Government of Madras considers the work done satisfactory or not. On the South-West Line the permanent way was retained in good order, one 25 feet masonry bridge was carried away by the bursting of a bund, but an improved iron screw-pile bridge was erected in three months.

The South-West Line has progressed satisfactorily the Agent says. The receipts during the year were 26 lakhs.

The expenditure was 15½ lakhs, showing a balance of 10½ lakhs, the amount of line open being 406 miles.

North-West Line.

In the North-West Line 41 miles are open, and a further length of 39 miles would, it was hoped, be opened in September 1863. The Ballipillay embankment and cutting were completed, thus enabling material trains to run to Coodoor, 66 miles; satisfactory progress took place in the Coodoor District. In the Bangalore District 68 miles of railway were laid by the 1st April 1863, and in July ballast trains were worked over this portion of the road.

The receipts were nearly 1½ lakh, the expenditure was Rs. 74,000, the balance Rs. 67,000.

BENGAL.

BENGAL.

Indian Branch Railway.

At the close of the official year 1862-63, the main line was open for 533 miles, and with colliery and river branches, in all 608½ miles. During the next year, 97½ miles were opened, the line being extended to the right bank of the Jumna at Allahabad. An extension line being made from Raneegunge to the Searsole Collieries, and from Mogulserai to Mirzapoor, for the transport of cotton. The number of passengers increased from 21,00,658 in 1862-63, to 27,27,620 in 1863-64, and the merchandise from 47,23,291 maunds in 1862-63, to 59,97,773, in 1863-64, and of minerals from 61,71,008 in maunds 1862-63, to 85,07,716 in 1863-64.

Rs.

The gross earnings amounted to... 80,78,287

The working expenses ... 44,31,389

And the profits ... 36,46,898

Dividend.

Taking the cost of the line as ... 2,10,000 per mile, the dividend approximates to 2.85 per cent. During the year, satisfactory progress has been made in the completion of works of equipment for the single line. A staff of Engineers has been employed under the Chief Engineer in making a survey, for the mud line in extension of the Raneegunge branch, and the Chief Engineer's report is

now with Government. Land at Howrah for the formation of a Coal depôt, a Salt depôt, a Branch line and important road diversions is now in course of acquisition. An intermediate class between the second and third has been instituted, and the raised seats removed from the carriages of the latter.

At the close of 1862-63 this line was open from Calcutta to Kooshtea, 110 miles; there has been no extension during the year under review.

The number of passengers amounted to 9,38,053, and merchandise 7,50,728, against 1,07,572. passengers, and 32,122 maunds conveyed during the last quarter the year preceding, when 77 miles only were open. The minerals, including Railway material, reached 4,24,824 maunds.

Rs.

The gross earnings were	...	8,32,923
The work expenses	...	4,03,381
And the profits	...	4,29,541

The approximate dividend, taking the cost per mile at a Dividend. lakh and a half, being 2.6 per cent.

There are, as on the East Indian Railway, four classes of passenger carriages. The line has established Kooshtea as a port of call for river steamers. The River Ganges however shifted, and a temporary line, 2½ miles long, which is used in the hot weather, has been constructed to the Goorai River. Messrs. Brassey & Co. have completed all the works, with some trifling exceptions. The completion of the Locomotive workshops has been delayed for want of the iron roofing. Officers of the Railway are now exploring, with a view to the extension of a light Railway to the foot of the Darjeeling hills.

At the commencement of the year under review, the entire line, 23¼ miles to Canning, was made available for traffic. The number of passengers 2,29,546, of maunds of merchandise, 87,183, of minerals, 86,186, against the numbers 1,51,581, 11,567, 72,032 in the year preceding.

Rs.

The gross earnings were	...	46,805
Expenses	...	61,714
The deficit was	...	14,909

The works for a single line, with the exception of the terminal buildings, are nearly complete. A project for extension from Sonapoor to the Bistopoor rice districts is under consideration.

27¼ miles from Nulhattee Station, East Indian Railway, to Azingunge, of the light railway between Nulhattee and Jeeagunge, was opened for traffic in December 1863, by the Indian Branch Railway Company; a continuation of the road from Azingunge to Bhogwangolah has also been proceeded with.

NORTH WESTERN PROVINCES.

There are two lines of Railway under construction N. W. PROVINCES. under the Government of these Provinces.

1st. The main line, East Indian Railway, from Kurumnassa River near Buxar to Delhi, in all 560 miles. East Indian Railway.

N. W. PROVINCES.

2nd. The Jubbulpoor Extension from Nainee, 3 miles east of Allahabad, to Jubbulpoor, in all 221½ miles.

Of the 1st, 381½ miles were opened by July 1st, 1863, and further portions up to 30th June 1864, making in all 512½ miles. There are three great iron bridges on this line. The Tonse, 7 spans of 150 feet, was completed during the year. The Jumna bridge, Allahabad, 14 spans of 205 feet made good progress, but the work on the Delhi Jumna bridge was interrupted owing to a diversion of the course of the Extension line from Delhi. The average number of miles open from Allahabad during the year was 337, the gross earnings, Rs. 31½ lakhs, the gross expenses, 17 lakhs, and the actual surplus, 14½ lakhs, *i. e.*, the expenses and profits, were 50.4 and 40.5 per cent. respectively of the gross earnings. The receipts during the year averaged Rs. 9,000 per mile; 6½ lakhs of passengers were carried during the year, more than 6 lakhs being third class, and more than one lakh of tons of goods were conveyed. Firewood is gradually becoming scarce, and is increasing in cost.

Jubbulpoor.

The construction of the railway from Allahabad to Jubbulpoor made good progress during the year. Ground was broken in February 1863 by the contractors, and two-thirds of the entire earth-work along the 221 miles of railway have been executed; nearly one-half the foundations, about two-fifths of the rock-cutting, and two-thirds of the gravel-cutting, one-eighth of the quantity of masonry and brick-work, has been finished, and a large quantity of ballast and other materials collected.

Iron Bridges.

Iron bridges are proposed for the Sutna, Roharee, Kutna, in order to provide a good headway, and Government has sanctioned their design by the Railway Consulting Engineer in England, provided that their cost does not exceed that of stone arched bridges over the same rivers. Light railways have also been proposed in Rohilkhund and Oudh, but no final steps have been taken towards their commencement.

PUNJAB.

PUNJAB.

Lahore and Umritsur.

Between Lahore and Umritsur, the ballasting has been completed, and the line is now in excellent order.

Mooltan and Lahore.

During the year, 11½ miles of Railway were opened from Mooltan to Sher Shah Ghât. There are now 131 miles in all for an engine to run over, though not in a continuous line. It was hoped that an engine would be able to run through in January 1865, and to open line for traffic in about 6 or 8 weeks afterwards.

The gross increase from passenger traffic over the previous year was Rs. 26,217, and of goods traffic, Rs. 7,605, and the traffic on the Sher Shah section is now steadily improving weekly. Some coal from the salt range at Pind Dadun Khan was successfully used as fuel. Steps have been taken by Government to work these coal veins, in the hope that dependence on wood fuel may eventually be unnecessary. Plans and Estimates for the line of railway prescribed by Government to connect Umritsur and the East Indian Railway at Ghazeeabad by way of Umballa, Delhi, Saharunpoor, and Meerut, have been submitted, and the centre line laid out. Messrs. Brassy and Wythes of London tendered for the construction of the line from Umritsur to Umballa,

Messrs. Brassy and
Wythes' contract.

PUNJAB.

and their tender was submitted to the Secretary of State. 27 miles from Umritsur to the Beas were tendered for by a local contractor, the tender was accepted and the work commenced. 58 miles from Ghazeeabad towards Umballa were also locally tendered for, and the work was to be commenced after the rains of 1864. Proposals are under consideration for the formation of "Keekur" and "Sheesum" plantations as supplies for fuel.

OUDH.

OUDH.

In this important matter much has been done. The Railway Company and Government have, so far as the matter can be arranged in India, come to a settlement. The lines proposed are:—a main line from the East Indian Railway at Buxar through Azimgurh, Sectapoor, Shahjehanpoor, Bareilly, and Moradabad, to some point on the Lahore and Delhi line near Saharunpoor, the distance being 500 miles; a branch from the main line to Fyzabad, distance 10½ miles; a branch from the main line, through Lucknow to the East Indian Railway at Cawnpore, distance 68 miles; and a branch from the main line to Byramghat, distance 12 miles. The centre line has been for the most part selected and laid out, and materials are collecting. An Engineer Officer as Consulting Engineer for Government was specially appointed, and work thus facilitated.

Branch Railway Com-
pany's Lines.

Abstract of expenditure from Imperial funds on Public Works in India during the year 1863-64.

LOCAL GOVERNMENTS AND ADMINISTRATIONS.	MILITARY.		CIVIL ADMINISTRATIONS.		PUBLIC IMPROVEMENT.		TOTAL.		ESTABLISHMENT.	TOTAL.
	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>British expenditure.</i>										
Madras	4,91,932	1,18,652	6,81,699	1,12,016	15,59,401	18,98,610	27,33,032	21,29,278	13,50,023	63,12,335
Bombay	15,65,500	2,93,694	5,09,004	1,99,095	51,83,096	10,41,897	72,57,000	15,34,686	13,68,517	1,01,60,803
Bengal	6,16,713	4,31,722	23,51,802	3,98,072	17,80,245	10,14,207	47,48,760	18,44,001	11,79,717	77,72,478
North Western Provinces...	6,59,111	4,11,749	6,02,433	1,25,415	12,71,393	8,85,946	25,32,937	14,23,110	11,32,486	50,88,533
Punjab	6,79,530	3,84,770	3,55,280	1,06,756	14,48,956	8,41,699	24,83,796	13,33,225	10,56,179	48,73,200
Central Provinces ...	1,79,404	83,062	1,94,214	14,431	11,50,961	86,762	15,24,579	1,84,305	4,68,706	21,77,590
British Burmah including Lighthouses ...	4,76,313	95,292	3,67,293	35,546	6,54,134	46,349	14,97,740	1,77,187	3,34,186	20,09,113
Oudh	2,79,345	1,13,237	3,00,691	26,573	3,28,616	97,792	9,08,652	2,37,607	2,64,634	14,10,893
Hyderabad... ..	2,10,271	41,691	44,032	2,732	2,99,444	22,244	5,53,747	66,607	1,18,833	7,39,247
Straits Settlements ...	71,556	16,283	44,422	27,520	70,809	31,834	1,86,787	75,637	88,955	3,51,379
Minor Administrations ...	30,002	3,076	1,80,423	13,945	80,873	24,744	2,91,293	41,765	23,676	3,56,739
Total	52,59,677	19,93,233	56,31,293	10,62,156	1,38,27,958	59,92,084	2,47,18,928	90,47,408	73,85,914	4,11,52,310
<i>Foreign expenditure.</i>										
Mysore	20,025	710	1,82,612	3,743	3,74,503	3,53,292	5,77,140	3,57,750	2,09,560	11,44,450

ANNUAL PROGRESS REPORT of Public
Works in India for the year 1863-64.

Dated 27th February 1865.

NY 1097/65
Printed April 20/65.

Circular

Civil Works

370

10991

Ordered that a copy
of the Report received
with the foregoing
Circular be furnished
to the Fuel Railway
Dept.

For St George
11th April 1865

To the Fuel Ry Dept. Herewith copy of the Report

21
2
Done 12th Feb 1865

P. 1855 D. 1097
Pro. of Govt. for Public

Civil Works.
Miscellaneous.

CIRCULAR No. 20.

To

FROM

SECY. TO GOVT. OF INDIA,
IN THE PUBLIC WORKS DEPT.

Dated 8th March, 1863.

Received 27 "

81.

Annual Progress Report of Public Works for
the year 1863-64.

No 202.203

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e. 1863-64 Pa. 7th

e. 991-11th April 1863