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[Despatch Abstract.]

GOVERNMENT MUSEUM.

Reviewing the report on the working of the -- during1895-96.

Copy to the Government of India.

BACK

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

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper:—

From E. THURSTON, Esq., Superintendent, Government Museum, to the Chief Secretary to Government, dated Madras, 15th June 1896, No. 470.

I have the honour to submit to His Excellency the Governor in Council my report on the working of the Government Museum during 1895–96, and to request that I may be supplied with 160 copies for distribution to other museums, &c.

ADMINISTRATION REPORT OF THE MADRAS GOVERNMENT MUSEUM FOR THE YEAR 1895–96.

In the last Annual report I briefly referred to the existing policy of organizing the Museum collections primarily on a geographical basis, with reference to the southern portion of the Indian Peninsula. Advantage was taken, during the year under review, of an invitation received from the Literary Society of Pachaiyappa's College, to select as a lecture subject "the Madras Museum as an aid to general and technical education." This lecture, though in popular language and delivered in my unofficial capacity, is reproduced in Appendix E, as it explains in detail my views as to the scope and objects of the Museum, and the lines on which its future development should be carried out.

2. Visitors.—The total number of visitors to the Museum rose from 368,282 in 1894-95 to 385,373 in the year under review. The greatest number of visitors on a single day was 37,011 at the feast of Pongul (January 15th). The following tabular statement shows the rise and fall in the number of visitors during the last ten years:—

1886–87	233,028
1887–88	264,182
1888–89	337,801
1889–90	378,234
1890–91	364,542
1891–92	361,452
1892–93	341,238
1893–94	311,112
1894–95	368,282
1895–96	385,373

The number of gosha females, who visited the Museum on the days set apart for them (the first Saturday of each month) during the year, was 2,444 against 2,254 in the previous year. The following statistics relating to gosha visitors during the last ten years are not without interest:—

1886–87	749
1887–88	1,811
1888–89	1,779
1889–90	2,186
1890–91	1,457
1891–92	1,409
1892–93	1,957
1893–94	1,524
1894–95	2,254
1895–96	2,444

3. Sunday Opening.—A proposal that the Museum and Connemara Public Library should be opened to the public on Sundays was before Government at the end of the year.

4. Establishment.—The services of a clerk were placed at my disposal by the Revenue Secretariat, to assist in the transfer of the books of the Museum Library to the Connemara Public Library. Changes were caused by the retirement of three gallery attendants, and the dismissal of a gallery attendant for being repeatedly found asleep when on duty. A theft of several swámis on a valuable brass candelabra occurred through carelessness on the part of a gallery attendant, who has since left the Museum service.

The establishment required for the Connemara Public Library and Museum new buildings was sanctioned in G.O., No. 916, Educational, dated 4th December 1895.

5. Lectures.—During the cold season I gave a course of practical demonstrations on anthropology and anthropometric methods in the new theatre, the acoustic properties of which, it may be noted, have proved to be excellent for lecture purposes. The demonstrations were given primarily with the object of supplementing, by practical illustration, the theoretical course prescribed for students reading for the University degree in history (including ethnology in its historic bearing), and were, I am glad to report, largely attended and appreciated.

6. New Buildings.—By far the most important event in the history of the Museum during the year was the transfer * to my charge of the new buildings in the Museum grounds, which are now officially entitled the Museum New Buildings and Connemara Public Library.

* G.O., No. 872, Public, dated 19th Oct. 1895.

In the Government Order referred to above, His Excellency the Governor in Council considered that the time had arrived to give effect to the suggestion made by the committee, appointed in 1894, to submit proposals as to the future management of the new buildings, that the Superintendent of the Museum should "be entrusted with the duty and have general charge of the free library, and the public collections to be deposited in the building." A scheme was subsequently submitted by me for the distribution of the accommodation in the new building, which met with the approval of Government.

It was decided by Government that the books of the Madras Literary Society should be placed in such portion of the Connemara Public Library as may be allotted to them by the Superintendent of the Museum, pending their removal to the building which it is proposed to erect for their accommodation. The transfer of the contents of the Museum Library to the Connemara Public Library was completed in February, and I found that the eastern wing, which I had allotted for the Museum Library, was insufficient, and that the allotment of any portion of the western wing to the Literary Society would, under existing conditions, be impracticable. The difficulty was, however, overcome by the sanction of Government for the conversion of the existing taxidermist's room into a record office for the patent office publications and other serials, and the building of a new work-room for the taxidermists in some part of the Museum grounds, where its presence will not interfere with the appearance of the Museum and Library buildings.

The transfer of the art and ethnological collections to the Museum new building has appreciably relieved the congestion from which the old building suffered; and space is now available for the proper exhibition of the economic and timber collections therein.

The space in the Museum new building (the arrangement of which had reached an advanced stage by the end of the year) has been distributed as follows:—

Ground floor.

Central room.—Anthropological Laboratory for the purposes of research.

Western room.—Collection of articles found in cairns and cromlechs, palæolithic and neolithic implements, pottery, &c.

Eastern room.—Reserved for future additions.

Upper storey.

Central room.—Art manufactures of Southern India, selected types of native gold and silver jewellery, and ethnological series, represented by peasant jewellery, photographs, &c.

Eastern room.—South Indian fabrics (women's cloths, mats, palempores, carpets, &c.).

Western room.—The rich collection of arms from the Tanjore armoury, which are now exhibited as a separate collection.

The stair-cases and corridors have been utilized for the exhibition of pictures and photographs, from the *Journal of Indian Art*, &c., of selected types of South Indian art wares and fabrics, and carved stone slabs from the Amarávati stupa, to serve as patterns for good design.

7. Anthropology.—The anthropological survey, of which the commencement was recorded in my last report, was steadily continued throughout the year. During my residence at head-quarters, anthropometric records of the local Vellálas and Ambattans (barbers) were obtained, and a start was made with what will be a long enquiry into the height and head measurements of students, belonging to different castes and creeds, at the Presidency College.

During a prolonged tour on the Nilgiri Hills, the Badagas of the plateau, and the Irulas and Kurumans (Kurumbas) who inhabit the lower slopes of these hills, the Kongas of Coimbatore who work on tea-estates, and a wandering gang of Lambádis (gipsies) were investigated. For the purpose of comparing the characteristics of the five tribes which inhabit the Nilgiris, no better hunting ground can be selected than the Kotagiri bazaar, where, on market day (Sunday) may be seen gathered together Todas from the distant Kodanád mánd, Kotas from the adjacent Kota village, Badagas from the surrounding villages, and, in fewer numbers, Irulas and Kurambas, who have marched up from their houses on the slopes to purchase the week's supplies. My work on the Nilgiris concluded, a short stay was made at Calicut, where the Tiyans, and Pattar Bráhmans, descended from East Coast Bráhmans who immigrated to Malabar, were examined.

The following is a summary of the work done by me in connection with the survey up to the present time:—

Locality.	Tribe or caste.	Number measured.	
		Male.	Female.
Madras	Ambattan	29	..
	Bráhman	40	..
	Kammálan	40	..
	Palli	40	..
	Pariah	40	..
	Vellála	40	..
Nilgiris	Badaga	40	..
	Irula	25	..
	Kota	25	20
	Kurumba	11	..
	Toda	25	25
	Kongas (from Coimbatore)	20	..
Malabar	Cheruman	25	25
	Muppa	24	..
	Paniyan	25	12
	Pattar Bráhman	25	..
	Tiyan	25	25
	Tiyan Policemen	25	
	Total ..	524	107

The publication of Museum Bulletin No. IV dealing with "the anthropology of the Todas and Kotas of the Nilgiri hills, and of the Bráhmans, Kammálans, Pallis, and Pariahs of Madras City" was delayed by difficulties in connection with the preparation of the illustrative plates. The manuscript of Bulletin No. V, dealing in like manner with the Badagas, Irulas, and Paniyans, was ready for press at the end of the year.

8. Archæology.—An excellent series of plaster-casts of the Asoka edicts on the rock at Jogodo in the Ganjám district was received from Mr. A. E. Caddy, who was deputed by the Government of Bengal to take the casts. Transcripts of these edicts by Bühler will be found in Burgess' "Buddhist stupas of Amarávati and Jaggayapeta," and an interesting account of Mr. Caddy's visit to Jogodo, and work in

connection with the inscriptions, has been published with G.O., No. 216, Public, dated 11th February 1896. The casts have been arranged in their proper sequence by one of the assistants to the Government Epigraphist.

To the Rev. J. E. Tracy the Museum was indebted for an iron spear-head dug up during the sinking of a well, at a depth of eight feet, at Periyakulam in the Madura district.

A small, but interesting collection of beads, and articles in bone and metal discovered by the light-house keeper at Manapád in the Tinnevelly district, was sent by Mr. A. L. Vibert, and arrangements have been made for further excavations to be made.

A plaster-cast reproduction of a tall column from Humpi was transferred from the School of Arts, and set up in the sculpture gallery.

9. Numismatics.—The Museum was consulted in connection with an extensive forgery of Moghul and other silver coins, the majority of which were forged square rupees of Akbar, struck from the same die, and bearing date 988. From a collection of old copper coins still current in Malabar, I selected, for the Museum collection, the rare coins of Tipú Sultán with tiger and battle-axe, and a Ceylon 2 stuiver, bearing on the obverse the monogram V.O.C. with the latter G. (Galle ?) above and 2.S. below, and on the reverse the date 1783 with Il. (Ilankei = Ceylon) in Tamil characters.

The truth of a recent statement that "the soil is a better and surer recipient of ancient remains than libraries" was borne out by a find, near Yellamanchili in the Vizagapatam district, of a large number of copper coins, identified by Dr. Hultzsch as coins of the Eastern Chalukyan king Vishnuvardhana (A.D. 663–672), with legend Vishama Siddhi as found on the seals of his two copper grants (Indian Antiquary, Vol. VII, 191, and Vol. VIII, 320).

A find, consisting of three pagodas of the Vijayanagar king Bukka, and sixteen unpublished pagodas of the Vijayanagar king Harihara, from the village of Chagallu in the Yadiki sub-division of the Anantapur district, was acquired under the Treasure Trove Act.

A large number of rare Indo-Portuguese coins were purchased as a valuable addition to the existing collection of this interesting series of modern Indian numismatics.

10. Botanical.—The herbarium-keeper, whose health has been failing for a long time, was, I am sorry to record, obliged to apply for a year's sick leave, which was granted. As no other member of my staff possesses the necessary knowledge for assisting me in dealing with botanical and economic questions, his place has not been filled up, pending the re-organization of the Botanical Department consequent on the death of Mr. M. A. Lawson, the Government Botanist, on the eve of his retirement. The Museum herbarium, at that time arranged in alphabetical sequence, was sent on loan to Mr. Lawson at Ootacamund some years ago. Though he wrote but little to advance our knowledge of the botany of Southern India, he has left as a valuable legacy for future botanists a herbarium, to which he materially added, in excellent order, and systematically arranged for the purpose of easy reference.

The preparation of the botanical index collection, referred to in my last report, was continued, and considerable additions were made to it in the form of spirit specimens, dried specimens for exhibition in cases, and herbarium specimens illustrating the stages of germination, morphology of leaves, etc., which appeal to the student with far greater force than diagrams or pictures in text-books.

11. Economics.—Specimens of the rhinoceros beetle (*Oryctes rhinoceros*) and locusts (*Acridium succinctum*) were sent by the Collector of South Canara, who reported that they were causing great damage to the cocoanut trees on the Amindivi group of the Laccadive Islands. The former were believed by the islanders to have increased owing to the revival of plantain cultivation, and said to have been troublesome in former days, but to have disappeared when plantain cultivation was abandoned. *Oryctes rhinoceros*, which has been reported as very injurious to cocoanut trees in Calcutta, Madras and Singapore, is said (Indian Museum Notes, Vol. II) to damage the trees by cutting large holes through the young leaf-shoot. Specimens of leaf-shoots thus cut by this insect were received during the year from the grounds of the Medical College, Madras.

Other insect-pests sent to the Museum for identification were—(*a*) caterpillars, which had eaten the rice crop down to the ground in the Chirakkal taluk of Malabar; (*b*) the rice Hispa (*Hispa œnescens*), which had caused damage, to the value of Rs. 10,000, to the rice crop in the Ponnáni taluk of Malabar; (*c*) larvæ of the red borer (*Zeuzera coffeæ*), which had bored into stems of the tea plant in the Wynaad; (*d*) larvæ, known as urappuchchi, destructive to young transplanted rice at Poonamallee, in the Chingleput district.

At the request of Government I was asked to institute an enquiry, in consultation with the Board of Revenue, as to the practicability of destroying prickly-pear (*Opuntia Dillenii*) by means of cochineal insects or other parasites. The Collectors of all districts in the Presidency were accordingly asked to cause enquiry to be made as to whether any animal or vegetable parasite has been anywhere observed, or can be found, feeding upon prickly-pear in such a manner as to warrant a hope that it might be used as an agency for destroying the plants. Specimens of prickly-pear infested by an animal parasite were received from the Kurnool and Anantapur districts, and sent, for identification, to the Indian Museum, from which a report was received to the effect that "from examination of the scales, the insects appear to be either identical with, or very closely allied to, *Chionaspis prunicola*, var. *theæ*, Maskell. I hope, however, to let you know later on exactly what it is."

At the request of the Reporter on Economic Products to the Government of India, an investigation was made in connection with woods, used in the manufacture of lacquered toys, which may be suitable for the manufacture of bobbins, those at present in use at cotton, jute, and other mills being imported. Specimens of toys in various stages of manufacture, and the woods (*Holarrhena antidysenterica* and *Psidium Guyava*—guava) used in their manufacture, were acquired at Vellore; and the Collector of the Kistna district was asked to obtain a corresponding series of specimens from Kondapille.

A fine block of heartwood of the red sanders tree (*Pterocarpus santalinus*), with a diameter of 7·2 inches, was presented by Mr. E. P. Popert, Conservator of Forests.

12. *Mineral Gallery.*—Specimens of corundum were received from a hilly village, named Jarmala, in the Kúdligi taluk of the Bellary district, with a note to the effect that, "whenever the soil is washed away by heavy rains, the stones are thrown up, and picked up by villagers. They are used by barbers for whetting their razors, and it is stated that they are reduced to powder, mixed with lac, fused together, and bangles manufactured from them." Arrangements were in progress, at the end of the year, for a collection of corundum, from the Salem and Coimbatore districts and Hunsoor in the Mysore Province, to be sent to the Imperial Institute for examination and report as to their economic possibilities.

I paid a flying visit to the Mysore gold fields, as the result of which the Mysore Gold Mining Company sent to the Museum a collection comprising blue quartz in block, quartz containing visible gold, quartz with pyrites and galena, tailings, dead rock, jasper, and agate.

A panoramic photograph of the gold fields showing their general appearance, and a series of photographs of the sub-fossil coral reef at Pámban on the Madura Coast were exhibited.

Large specimens of kyanite (or cyanite) were sent by Mr. Brougham of the Forest Department from the Podalakur reserved forest in the Nellore district. The mineral was reported to be used for medicinal purposes by natives. When blue and transparent in sufficiently large pieces, this mineral is used as a gem somewhat resembling sapphire.

A fine specimen of mica (muscovite) from the Nellore mines, with interlaminar inclusions, was exhibited.

To Messrs. Parry and Company the museum was indebted for large lumps, ordinary lumps, chips, and dust of graphite (plumbago) from Travancore. Among other additions may be noted specimens of carbonised wood from a bore-hole of the Gódávari Coal Mining Company (Messrs. Binny and Company), a crystal of beryl

(aquamarine) from the Salem district (Mr. C. Middleton); and a specimen of fuchsite (chromium mica) from Talaghat, 12 miles south-south-west of Bangalore (Mr. Bruce Foote).

The increasing number of those engaged in commercial enterprise, who consult the Museum in connection with minerals of economic importance, is noticeable as a sign of the attention which is being paid at the present day to the development of the mineral resources of the Presidency.

13. *Mammal and Bird Gallery.*—To Mr. W. M. Daly, the Museum was indebted for specimens (two male and one female) of the Malabar spiny mouse (*Platacanthomys lasiurus*) captured at Mudgiri (3,000 feet) in the Kadúr district of the Mysore Province. The following measurements were recorded by Mr. Daly:—

	Male.	Female.
Head and body	4·10 inches	5 inches.
Tail without hair	3·6 "	3·9 "
Hind-foot without claw	1 inch	1 inch.

A series of skulls was prepared and exhibited, illustrating variation in the horns of the domestic buffalo and cattle, sheep, and goats.

A quaint request was received for some powdered elephant's tooth, as being a specific cure, when employed as a local application, for mumps.

The nest of the Brahmini kite (*Haliastur indus*) in the fork of a banyan tree, and the nest of the crimson-breasted Carbet, or copper smith (*Xantholæma hæmatocephala*) bored in a casuarina pole, were added to the collection.

Among the additions to the collection of birds, the following are worthy of special notice:—

(*a*) Violet cuckoo (*Chrysococcyx xanthorhynchus*), recorded in the Fauna of British India from "Dibrugarh in Assam, Cachar and Tipparah, throughout Burma and the Malay Peninsula, Andaman and Nicobar Islands," was caught by a bird-catcher near Perambúr within the city of Madras early in March.

(*b*) Banded rail (*Porzana ceylonica*) was found, in the middle of May, in the mineral gallery of the museum.

(*c*) Western blue rock thrush (*Petrophila cyanus*) was shot in the Museum grounds in February.

14. *Reptiles.*—The following were added to the existing collection in the annexe between the main hall and mammal gallery:—

Stuffed specimens of *Crocodilus Palustris* (young) from the Gódávari and Tangabudra rivers.

Skeletons of rock-snake (*Python molurus*) and *Chamæleon calcaratus*.

Eggs of rock-snake.

Skulls of the cobra, Russell's viper, and rock-snake to show the characters of their dentition.

15. *Marine Gallery.*—A conspicuous addition was made to the contents of this gallery in the shape of a series of well-prepared skeletons representative of various families of sharks, rays, and bony fishes. The manner in which the Head Taxidermist, during my absence on tour, without any suggestion from myself, initiated this series, gave me great satisfaction. The series includes a very fine skeleton of a sword-fish (*Histiophorus gladius*) caught off Madras.

A specimen of the tiger-shark (*Stegostoma tigrinum*), 7 feet and 6 inches in length, also caught off Madras, was exhibited.

Among other additions may be noted a large fresh water crustacean (*Palæmon carcinus*) from Madras, a large shell of *Sepia* sp. found on the Madras beach, and a fossil coral (Fungia sp.) found during the excavation of foundations in Madras.

Specimens, full-grown and immature, of the pearl-oyster (*Ariecula fucata*) which is "fished" for off Tuticorin, found on the coast at Collachel, were sent for identification by Mr. J. Thomson, Resident of Travancore. In 1886, I saw a number of shells of this pearl-producing mollusc on the shore at Narrakal, near Cochin, which, I thought,

must have been rolled in by the sea from a bank at no great distance from the shore. I am informed that a contract was given in 1884 to a native of Tuticorin, who collected about 4,900 shells off Collachel.

16. *Live Animals.*—The animals (mostly snakes) exhibited in the new entrance hall continued to be a source of great attraction. The following notes relating to animals kept in confinement may not be without interest:—

Python (*Python molurus*) ate 82 jerboa rats (*Gerbillus indicus*) in the year. Will not eat house rats. Shed its skin on the 26th April, 18th August, 19th December.

Rat-snake (*Zamenis mucosus*) ate 142 green frogs in the year. Shed its skin 13th May, 14th June, 15th July, 18th August, 13th September, 12th October, 11th November, 9th December, 17th January, 27th February, 27th March, *i.e.*, in every month.

Russell's viper (*Vipera russellii*)—One specimen ate only two rats from 1st April till its death on 13th October. Its successor ate 12 rats from 14th November to 31st March.

Whip snake (*Dryophis mycterizans*) died as the result of a wound inflicted in the back by a mouse. Ate 16 mice from 22nd April to 23rd December. Shed its skin on 21st June and 28th September.

Tree snake (*Dendrophis pictus*) ate 79 toads and 1 lizard from 12th August to 31st March. Shed its skin 24th October.

Sand snake (*Eryx johnii*) ate 16 rats and 3 mice in the year. Shed its skin 1st April, 3rd May, 22nd October, 21st February.

Sand snake (*Gongylophis conicus*) ate 57 mice in the year. Shed its skin 18th April, 18th May, 6th August, 9th October.

Tropidonotus stolatus ate 131 toads in the year. Shed its skin 29th June, 21st October, 22nd December, 25th January.

Lycodon aulicus lived for only two months, refusing food entirely.

Krait (*Bungarus cæruleus*) lived only three months, during which it ate 16 toads and a lizard.

Chamæleon (*Chamæleon calcaratus*) eats two or three cockroaches daily.

Slender Loris (*Loris gracilis*) eats plantains and several cockroaches daily.

17. *Library.*—The number of visitors to the library was 5,815 against 6,989 in 1894–95. The small number is accounted for by the fact that the library was closed to the public during the transfer of the books to the Connemara Public Library, from 15th November, 1895, till the end of the financial year.

The published catalogue of the library, which is arranged alphabetically according to author's names, is being supplemented, for the convenience of readers, by a series of subject indexes, to be printed in separate fasciculi. The preparation of the manuscript slips of these indexes occupied a great part of my time during the last half of the year. The subjects which were ready for press at the end of the year were—

Anatomy; Biology.	Education; Ethics; Logic; Metaphysics; Philosophy; Political Economy.
Natural History (animal); Zoology.	Forestry; Timbers.
Anthropology; Folklore.	Geology; Palæontology.
Archæology.	History.
Architecture.	Mineralogy; Metallurgy.
Arts and Industries.	Numismatics; Medals; Heraldry.
Botany; Horticulture.	Natural Philosophy.
Dictionaries; Lexicons; Encyclopædias; Gazetteers; Hand-books.	Sport and Games.
Economic Products and Economic Entomology.	Travels and Foreign Countries.
	Voyages.

The appointment of a Sub-Librarian and Personal Assistant to the Superintendent received the sanction of Government,* with the provision that, as he will be of little use until he has acquired a thorough knowledge of his work and the books in his charge, he should be required to bind himself, under a penalty of Rs. 5,000, to serve in the post for at least ten years, unless the Government sees reason to permit him to leave it.

* G.O., No. 916, Educational, dated 4th December 1895.

The following is a summary of the additions to the library :—

Presented by Government	420
Do. by Private Individuals	154
Acquired by Purchase	85
British Museum Publications	5
Patent Office Papers	43
Periodicals	53
Record Publications of the Master of the Rolls	13
Parliamentary Papers	40

18. *Valuable Stock.*—The necessary inventory of stock was maintained and duly checked. The collections were all in good order at the end of the year.

(Signed) EDGAR THURSTON,
Superintendent, Government Museum.

APPENDIX A.

Visitors to the Government Museum from 1st April 1895 to 31st March 1896.

1895–96.	Signatures made in											
	English.	Telugu.	Hindustani.	Tamil.	Maharatta.	Nagaree.	Goozerathe.	Canarese.	Chinese.	Chingalese.	Malayalam.	Bangalee.
1	2	3	4	5	6	7	8	9	10	11	12	13
April	567	898	427	2,202	70	..	59	43	..	..	89	21
May	528	1,031	367	2,948	23	2	43	78	..	..	88	11
June	795	1,174	638	2,944	25	4	68	167	..	4	74	72
July	673	1,123	404	3,049	25	..	63	76	..	2	72	19
August	603	1,056	474	3,153	9	..	33	97	..	3	47	15
September	631	1,243	364	2,707	22	1	30	93	..	4	48	20
October	535	1,215	449	2,842	20	..	26	101	..	..	29	26
November	406	1,296	349	2,858	13	4	30	131	..	..	98	2
December	718	1,869	467	4,367	18	..	105	136	2	1	108	15
January	816	1,026	489	5,379	13	2	30	73	..	..	44	2
February	574	814	410	2,433	11	..	35	24	..	..	48	2
March	456	664	888	2,333	3	..	32	19	2	2	37	52
Total ..	7,302	13,409	5,726	37,215	252	13	554	1,038	4	16	782	257

1895–96.	Total of signatures.	Unable to sign but tally kept.	Total of visitors.	Number of		Total of visitors.
				Men and boys.	Women and girls.	
	14	15	16	17	18	19
April	4,376	21,837	26,213	14,438	11,775	26,213
May	5,119	21,206	26,325	15,026	11,299	26,325
June	5,965	20,763	26,728	16,243	10,485	26,728
July	5,506	22,075	27,581	15,957	11,624	27,581
August	5,490	22,354	27,844	16,247	11,597	27,844
September	5,163	21,474	26,637	15,673	10,964	26,637
October	5,243	18,664	23,907	15,365	8,542	23,907
November	5,187	19,370	24,557	14,388	10,169	24,557
December	7,806	44,346	52,152	29,646	22,506	52,152
January	7,874	71,278	79,152	40,758	38,394	79,152
February	4,351	17,399	21,750	12,725	9,025	21,750
March	4,488	18,039	22,527	14,342	8,185	22,527
Total ..	66,568	318,805	385,373	220,808	164,565	385,373

APPENDIX B.

Donations, 1895–96.

Abbott, Mr. C
Insect (*Zeuzera coffeæ*) and tea stem bored by the larva.

Achard, Mr. L. N.—
Flying lizard (*Draco dussumieri*).
A small collection of beetles.
Snakes—
Echis carinata.
Tropidonotus beddomii.
Trimeresurus strigatus.

Arden, Revd. A. H.—
Snake (*Hydrophobus nympha*).

Asiatic Society of Bengal—
Silver coins of British mintage found in the Birbhum district.
Impure gold coins belonging to "Class B of the Great Kusans" from the Rawalpindi district.
Silver coins—Gadia from the Nagpur district.
Silver punch-marked coins from the Shahpur district.
Coins of Muhammad Karlak from the Gujramwála district.
Rupees of Muhammad Sháh of Afghanistan from the Shahpur district.
Gold and silver later Indo-Scythian coins, and later Great Kusans Class B, from the Ghang district.
Copper coins of the Sultans of Málwa from the Mandla district.
Rupees of Alamgir II. from the Burdwan district.
Indo-Scythian coins from the Puri district.

Bellary district, Collector.—
Corundum from Jarmala, Kúdligi taluk, Bellary district.

Binny & Co., Messrs.—
Carbonised wood from bore-hole, Godávari Coal Mining Company.

Brougham, Mr. J. H. B.—
Mineral (kyanite), Nellore district.

Cardozo, Mr. H. O'C.—
Crocodilus palustris from the Gódávari river.

Chambers, Hon'ble Mr. G. L.—
Graphite in quartz.

Cottingham, Mr. H. G.—
Stripe-necked mungoose (*Herpestes vitticollis*).
Great horn-bill (*Homraius bicornis*).
Jungle grey horn-bill (*Tockus gingalensis*).
Brown headed king-fisher (*Halcyon leucocephalus*).
Common Indian king-fisher (*Alcedo bengalensis*).
Snakes—
Tropidonotus plumbicolor.
Hydrophobus nympha.
Dipsas sp.

Daly, Mr. W. M.—
Malabar spiny mouse (*Platacanthomys lasiurus*).

Dunhill, Mrs.—
Snake (*Chersydrus granulatus*).

Eleazer Pillay, Mr. J. S.—
Scorpion with young.

Foote, Mr. R. B.—
Fuchsite (chromium mica) from the Mysore Province.

Henderson, Mr. J. R.—
Russell's viper, young (*Vipera russellii*).

Jeeva, Mr. P. G.—
Silver and copper coins, and quartz crystals.

Middleton, Mr. C.—
Beryl and iron garnet from the Salem district.

Municipal Commission, Madras—
Eggs of Python (*Python molurus*).
Black Leopards (*Felis pardus*).
Tiger cubs (*Felis tigris*).
Black monkey.
Abyssinian baboon.
Opossum.

Mysore Gold Mining Company.—
Quartz showing visible gold.
White quartz.
Dark-blue quartz.
Quartz adhering to barren matrix.
Dead rock.
Blue quartz.
Quartz and pyrites.
Quartz and galena.
Quartz and schist.
Jasper in lode-matter.
Agate.
Tailings from stamps.
Tailings from pan-mill.

Parry & Co , Messrs.—
Graphite (plumb[illegible]vago) from Travancore.

Phipps, Mr[illegible]. C. E.—
Tasar Silk Moth (*Antheræa mylitta*) and Cocoon.

Popert, Mr. E. P.—
Red Sander's wood (*Pterocarpus santalinus*).

Powell, Mr. E. B.—
Moths (*Actias selene*).

Raghavacharlu Garu, Mr. V.—
Cockatoo.

Royal Asiatic Society (Bombay Branch)—
Silver coins of Aurangazib and Shah Jahán found in the Nasik district.

Sandford, Mr. N. C.—
Inscribed stone found in a Pándyan grave near Jalarpet.

Simpson, Mr. C. S.—
Night heron (*Nycticorax griseus.*)

Superintendent, Royal Botanical Gardens, Calcutta.—
Herbarium specimens.

Taylor, Mr. R. S. M.—
Copper coins (dubs).

Tracy, Revd. J. E.—
Iron spear-head from Periakulam.

Vibert, Mr. L.—
Bone, lead, and metal articles dug up at Manapád, Tinnevelly district.

Walker, Mr. J. L.—
Russell's viper (*Vipera russellii.*)

Ward, Mrs.—
Caterpillar.

Wedderburn, Mr. H. G.—
Nest of Tailor-bird (*Orthotomus Sutorius.*)

Wroughton, Mr. R. N.—
Collection of Indian ants.

APPENDIX C.

Standard Works.

Donations.

Alphand, A., and le Baron Ernouf-Traité pratique et didactique de l'Art des Jardins
Asylum Press Almanack—1800, 1801, 1808, 1812, 1815–17, 1820, 1822–38, 1841, 1843–46, 1849–50, 1852, 1854, 1863, 1871–1880.
Baynes, C. R.—Criminal Law of the Madras Presidency, 1858.

Berg. L. W. C., von den.—Fath-al Quarib : la Revélation de l' Omnipresent, 1894.
Bernard, H. M.—Notes on the Madreporarian Genus Turbinaria, 1895.
Challenger, H. M. S.—Summary of Results, 1895.
Chatterjee, M. N.—[illegible]rimadbhagavatam : Translation. Book I, 1895.
Clarke, R. T.—In[illegible]ovement of Cotton by Purity of Seed, 1866.
Danvers, F. C.—[illegible]e Portuguese in India: History of the Rise and Decline of their Eastern Empire, 1894.
Dutt. M. N.—Ramayana : Translation, Vols. 2 and 3, 1892–93.
Gribble, J. D. B.—History of the Deccan, Vol. 1, 1895.
Hampson, G. F.—Moths [Fauna of British India], Vol. III, 1895.
Hooper, D.—Camphor Leaf Oil, 1896.
Howard, D.—Notes on Cinchona Bark.
Hunter, Sir W. W.—Bengal M.S. Records, 4 Vols., 1894.
Jamieson, G.—The Silver Question : Injury to British Trade and Manufactures, 1895.
Leitner, G. W.—Hunza and Nagyr Hand-book, 1893.
Do. Dardistan, 1893.
Lilljeborg, V.—Synopsis Crustaceorum Svecicorum Ordinis Branchiopodorum et Subordinis Phyllopodorum, 1877.
Lingard, A.—Summary of further Report on Surra. Bombay, 1895.
Mitra, Sarat Chandra.—Notes on Behari Customs and Practices.
Do. North Indian Folklore about Thieves and Robbers.
Moore, F.—Lepidoptera Indica, Vol. 2, Parts 21–24, 1895–96.
Phra Tripitaka.—In Pali-Siamese Characters, 39 Vols.
Platts, J. T.—Grammar of the Persian Language, Part I, 1894.
Ramasawmi Raju.—Sreemat Rajangala Mahodyanam, Part 2, 1895.
Ramsay, H. M.—Anthropometry in Bengal, 1895.
Ray, Pratapa Chandra.—Mahabharata : Translation, Parts 94–97, 1894.
Rodgers, C. J.—Catalogue of Coins of the Indian Museum, Part 2, 1894.
Do. Coins of the Musalman Kings of Mábar, 1895.
Do. Mogul Copper Coins, 1895.
Royle, J. F.—Review of the Measures which have been adopted in India for the improved Culture of Cotton, 1857.
Sharpe, R. R.—London and the Kingdom, Vol. III, 1895.
Smither, J. G.—Architectural Remains, Anuradhapura, Ceylon, 1894.
Syad Mahomed Latif.— History of the Punjab, 1891.
Waddell, L. A.—Buddhism of Tibet, or Lamaism, 1895.
Wight, R.—Notes on Cotton Farming explanatory of the American and East Indian Methods, 1862.

APPENDIX C.

Standard Works.

(By Purchase).

Allen, G.—Colours of Flowers as illustrated in the British Flora, 1891.
Armstrong, H. E.—Introduction to the Study of Organic Chemistry, 1886.
Baker, Sir S. W.—With Rifle and Hound in Ceylon, 1892.
Ball, Sir R. S.—Elements of Astronomy, 1891.
Bell, H —Railway Policy in India, 1894.
Bennett, A. W.—Text-book of structural and physiological Botany, 1882.
Bettany, G. T.—Primitive Religions, 1891.
Blanford, W. T.—Birds. [Fauna of British India.] Vol. 3, 1895.
Blyth, A. W.—Poisons : their Effects and Detection, 1895.
Braddon, Sir E —Thirty Years of Shikar.
Caine, W. S —Picturesque India, 1891.
Candolle, A. and C. de.—Monographiæ Phanerogamarum, Vol. IX, 1896.
Cooke, J. P.—The New Chemistry, 1887.
Davies, D. C. A.—Treatise on Earthy and other Minerals and Mining, 1892.
Ewing, G.—Hand-book of Photography, 1895.
Fauna und Flora Des Golfes Van Neapel. Monograph, 22, 1895.
Fawcett, H. and M. G —Essays and Lectures on Social and Political Subjects, 1872.
Fergusson, J.—History of the Modern Styles of Architecture, 1891.
Foster, C. L. N —Text-book of Ore and Stone Mining, 1894.
Friedlander.—Zoologisches Adressbuch, 1895.
Galton, F.—Fingerprint Directories, 1895.
Grace, W. G.—Cricket, 1891.
Grant, A. E.—Indian Manual of Hygiene Vol. I, 1894.

Gray, H —Anatomy: descriptive and surgical, 1893.
Gribble, J. D. B —Outlines of Medical Jurisprudence for India, 1892.
Griffin, W. N.—Elements of Algebra and Trigonometry, 1881.
Hartmann, R.—Anthropoid Apes, 1885.
Haydn—Dictionary of Dates, 1895.
Heilprin, A.—Geographical and Geological Distribution of Animals, 1887.
Holmes, G. C. V.—Steam-engine, 1891.
Huxley, T. H.—Discourses: Biological and Geological, 1894.
Do. Evolution and Ethics, 1894.
Hunter, Sir W. W.—The Old Missionary, 1895.
Kossmat, W. W.—Untersuchungen uber die Sudindische Kreideformation, 1895.
Laing, S.—Modern Science and Modern Thought, 1895.
Lawson, Sir. C.—Life of Warren Hastings, 1895.
Lefévre, A.—Race and Language, 1894.
Lock, C. G W.—Tobacco: growing, curing, and manufacturing, 1886.
Lockyer, J. N.—Studies in Spectrum Analysis, 1883.
Lombroso, C, and W Ferrera.—Female Offender, 1895.
Malthus, T. R.—Essay on the Principle of Population, 1878.
Meyer, G. H. V.—The Organs of Speech, 1883.
Miller, W. A.—Introduction to the Study of Inorganic Chemistry, 1893.
Milne, J.—Earthquakes and other Earth Movements, 1886.
Morselli, H.—Suicide: Essay on Comparative Moral Statistics, 1881.
Mollett, J. W.—Illustrated Dictionary of Words used in Art and Archæology, 1883.
Muller, Max —Sacred Books of the East, Vols. 1-7, 9-12, 14-16, 18-19 and 21,1879—1884.
Murray, G —Phycological Memoirs, Part 3, 1895.
Natural History, Royal, edited by R. Lydekker, 1895–96.
Nordau, Max —Degeneration, 1895.
Parker, W. K.—Mammalian Descent, 1885.
Posnett, H. M.—Comparative Literature, 1886.
Poulton E. B.—Colours of Animals, 1890.
Quatrefages, A. de.—Hommes Fossiles et Hommes Sauvages, 1884.
Ratzel, F.—History of Mankind, 1895.
Reid, W. M.—Culture and Manufacture of Indigo.
Richards, J. W.—Aluminium, 1896.
Roberts-Austen, W. C.—Introduction to the Study of Metallurgy, 1892.
Rose, T. K.—Metallurgy of Gold, 1894.
Rosenthal, J.—General Physiology of Muscles and Nerves, 1883.
Sayce, A. H.—Introduction to the Science of Language, 1890.
Schlich, W.—Manual of Forestry, 1889–95.
Schmidt, O.—Doctrine of Descent and Darwinism, 1887.
Semper, C.—Reisen in Archipel der Philippinen, 1895.
Sidgwick, A.—Fallacies, 1883.
Shelly, C. P. B.—Workshop Appliances, 1894.
Stephen, O. L.—Sir Victor Brooke: Sportsman and Naturalist, 1894.
Stewart, B.—Conservation of Energy, 1883.
Technical Educator.
Thomson, H. C.—Chitral Campaign, 1895.
Thorpe, T. E.—Quantitative Chemical Analysis, 1882.
Topinard, P.—Anthropology, 1894.
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Trouessart, E. L.—Microbes, Ferments, and Moulds, 1886.
Tyndall, J.—Heat: a Mode of Motion, 1890.
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Unwin, W. E.—Elements of Machine Design, 1892.
Vignoli, T.—Myth and Science, 1882.
Vines, S. H.—Lectures on the Physiology of Plants, 1886.
Warner, F.—Physical Expression: its Modes and Principles, 1885.
Watson, H. W.—Elements of Plane and Solid Geometry, 2nd Edition, 1872.
Watt, A.—Art of Paper-making, 1890.
Do. Art of Leather Manufacture, 1890.
White, J. T.—Latin-English and English-Latin Dictionary, 1883.
Wilson, C. R.—Early Annals of the English in Bengal, 1895.

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American Naturalist.
Annales des Sciences Naturelles (Botanique).
Annales des Sciences Naturelles (Zoology).

Annals and Magazine of Natural History.
Annales de la Société Entomologique de France.
Annual Register.
Asian.
Bombay Natural History Society. Journal.
British Association for the Advancement of Science. Report, 1895.
Curtis' Botanical Magazine.
Directory of the chief Industries of India.
Entomological Society of London. Transactions.
Epigraphia Indica.
Geological Society of London. Quarterly Journal.
Ibis.
Illustrated London News.
Indian Agriculturist.
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Lawrence Asylum Press Almanack.
Linnean Society (Botany). Journal.
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London Weekly Times.
Microscopical Science. Quarterly Journal.
Museum d'Histoire Naturelle. Nouvelles Archives.
Nature.
Palaeontographical Society. Transactions.
Pandit.
Royal Society of London. Philosophical Transactions.
Do. do. Proceedings.
Scientific American.
Spengel. Zoologische Jahrbucher.
Tropical Agriculturist.
Zoological Record.
Zoological Society of London. Proceedings.

APPENDIX D.

Classified List of Expenditure of the Government Museum during the year 1895-96.

	Actuals, 1895-96.	Revised estimate, 1895-96.
	Rs.	Rs.
Salaries.		
Superintendent	9,600	9,600
Exchange compensation allowance	1,721	1,839
Total ..	11,321	11,439
Permanent Establishment.		
First Assistant, second Assistant, first, second and third taxidermists, herbarium-keeper, artist, writer, assistant writer, librarian, assistant librarian, thirteen hamals, Superintendent's peon, chickledar, and peon—27 persons	6,773	6,892
Temporary Establishment.		
Clerk, collecting taxidermist, two gallery attendants, three gardeners, two sweepers, five watchmen, water pandal Brahmin, punkah-puller, and chockra—17 persons	1,149	951
Total, Establishment ..	7,922	7,843
Allowance.		
Travelling allowance	418	1,000

	Actuals, 1895–96.	Revised estimate, 1895–96.
Supplies and Services.	Rs.	Rs.
Cost of specimens purchased on tour	694	1,000
Cost of specimens, objects of interest and coins purchased at head-quarters	1,116	700
Cost of books, and publications	1,808	1,800
Preparation of fittings, furniture, &c., for the collections	3,056	2,950
Cost of European stores	30	50
Total, Supplies and Services ..	6,704	6,500
Contingencies.		
Purchase and repair of furniture	199	200
Binding books and lithographing plates	800	800
Rents, rates and taxes	1,098	1,098
Freight, boat-hire and landing charges, railway fare, cartage charges, wages and coolies, expenses for lighting, expenses for keeping clean, ammunition, expenses for reading coins, water shed, garden, measurement and jut hire-charges, charges for feeding live animals, subscriptions to local newspapers, and office expenses and miscellaneous. Kerosine-oil.	881	720
Service postage and telegram charges	196	200
Total, Contingencies ..	3,174	3,018
Grand Total ..	29,539	29,800

APPENDIX E.

The Madras Government Museum as an aid to General and Technical Education.

A lecture delivered at Pachaiyappa's College, 31st October 1895.

Looking at my annual administration report for 1894–95, in which I have to give an account of my stewardship during the year, I see that the Museum was visited by 368,282 visitors—a number which may be accepted as a proof that the institution is an eminently popular one. Analysing the figures, I find that, of the 368,282, 300,163 were unable to sign their names, *i.e.*, they belonged to the uneducated classes, who, according to the census report, 1891, constitute 92·13 per cent. of the entire population of the Madras Presidency. Of those who were sufficiently educated to sign their names, I find that 38,865 signed in Tamil, 13,803 in Telugu, 6,634 in English, 5,812 in Hindustani, and the remainder in Canarese, Malayalam, Mahratti, Nágari, Guzeráti, Bengali, Cinghalese and Chinese; so that my visitor's book is, in its way, a polyglot curiosity.

An interesting fact, in connection with the subject of visitors, is that the Museum is, on the first Saturday of each month, closed to the general public, and set apart, with female attendants in charge, specially for Hindu and Muhammadan gosha females, who came, during the year 1894–95, to the number of 2,254, as against 1,524 in the preceding year, and only 749 nine years ago. The Museum is therefore, I am glad to record, taking its share in the promotion of female education and enlightenment.

For the great mass of visitors, who come under the heading of sight-seers, and regard the Museum as a tamásha house, *jadu gahr* (wonder-house), or 'stuffing college,' it matters but little what exhibits are displayed, or how they are displayed, provided only that they are attractive. To the wholly uneducated classes, the main delight of a visit to the Museum is the recognition of familiar objects, which they shriek out by name, *e.g.*, káká (the crow), pachi pámbu (the green tree-snake), áni (the elephant), periya min (big fish—the whale!), etc. The simple requirements of the uneducated are, therefore, easily satisfied without the expenditure of much brain-energy, but it is my chief duty to provide material adapted for the entertainment of those who come to the Museum, not merely with a view to getting through a spare hour of the day, but with a definite idea of receiving instruction, and acquiring solid information.

You, as students, with the examination demon constantly before you, are compelled to gather in knowledge mainly by appeals to the auditory centre (the centre of hearing) through the medium of lectures. But, in many cases, the appeal to your sense of hearing is, or should be, supplemented by a further appeal to the visual centre (the centre of sight) by means of diagrams, the black board, experiments, and specimens. Moreover, in elementary education, what are known as object lessons, the principle of which depends on the proverb that 'to see is to know,' are resorted to with a view to investing the dry bones of lessons with some element of interest. The system of object lessons has, to my knowledge, made considerable strides in the City of Madras within the last few years, and constant application is now made to the Museum for the loan to schools of such varied objects as coral, bird's eggs, fishes, coal, iron, tin, birds, snakes, crocodiles, turtles, skulls, shells, etc. On one occasion a full-grown stuffed bear was lent out to a pupil teacher, to enable her to give an original object lesson at an examination, and application (which it was impossible to comply with) has even been made for the loan of an articulated skeleton of a large waler horse.

On several occasions in recent years, a prize has been offered to students for the best essay based on a visit to the Museum, and I have been asked to adjudicate on the essays. One competitor, I remember, commenced as follows:—"I had often heard that Mr. Thurston is a wonderful man, and, having seen him, feel that he was, as it were, set apart by the Creator for the special function, which he so ably fulfils." I am sorry to say that this touching appeal to my vanity did not secure the prize. Another competitor said that I was giving them an interesting lecture in the gallery, when I looked at my watch and said "Hulloa! It is time for breakfast," and they saw me no more, which was unfortunate. He, too, was not the prize-winner.

I have a very vivid recollection of paying a visit, some years ago, to a school in London, whereat a class, composed of tired and underfed children of the labouring classes, was struggling to learn the rudiments of physiology, and repeating, over and over again, in a musical sing-song, "scapula, clavicle, humerus, ulna, radius, carpus, metacarpus, phalanges," *i.e.*, the name of the bones of the upper extremity, the position of which had never been shown to them either in a diagram, on the black board, or on the skeleton. Parrot knowledge, acquired in this way, is, in my eyes, an abomination, and it is a pitfall into which many of you students in India tumble, like elephants at a keddah, with the inevitable result that, when you come up for examination, and find yourselves face to face with questions which take you off the beaten path of the lecture or the text book, you are, to use an unacademic phrase, plucked; and to this cause is due the large number of "failed F.A.'s," with whom every head of an office, Government or Commercial, is so familiar.

Gentlemen, I speak with many years experience as a University examiner, and know full well the common, and exasperating type of answer, in which the candidate, who sails merrily along, so long as he can quote line after line, or, page after page, of Huxley's 'Elementary Lessons in Physiology,' comes to utter grief when he has to think for himself, and answer questions, which are not directly answered for him in the book. A candidate will, for example, quoting from Huxley, tell the examiner that "it takes about four pounds of fatless meat to yield 4,000 grains of carbon, whereas one pound will furnish 300 grains of nitrogen," but will be wholly unable to mention ten food-stuffs, six of which contain nitrogen. and four do not—a simple straight forward question, for the answers to which I remember recording a melancholy number of duck's eggs, which, by the way, are examples of food-stuffs containing nitrogen.

But it is essentially in practical examinations that I notice a marked absence of development of the power of observation, which may be illustrated by two examples taken from a large stock at my disposal. I have here two specimens, which were given for identification at the practical portion of the last B.A. Degree examination in zoology. The one is the skin of a skate or ray (one of the elasmobranch fishes) beset with bony tubercles; the other is the glassy anchoring spicules of a marine sponge (Hyalonema). The former was, in most cases, identified as the skin of an elephant, hippopotamus, or rhinoceros; the latter as a piece of the tail of a horse. Some candidates even went so far as to say that the tail was in a fossil state, and that the horse was an Arab steed.

Our Indian museums would be fulfilling a very useful function if, in the capital city of each province, collections were brought together and properly exhibited, illustrating and forming a classified index to the natural history, ethnology, arts, archæology, economic resources, &c., of the province concerned.

I take it that a Museum, such as that of Madras, which, as compared with some of the great European and American museums, is a small and modest institution, has four primary functions to fulfil:—

1. The exhibition of a systematically arranged series, constituting an index, or illustrated guide, to the natural history (including mineralogy), ethnology, arts, industries, economic resources, etc., of Southern India;
2. To assist the cultivation of the power of observation;
3. To be an agency for the enlightenment of the people;
4. To indirectly assist the cause of education, by the exhibition of collections teaching the most important points in the structure of the principal types of animal and plant life, etc., as an aid to pupils at colleges or schools, which are inadequately supplied with teaching museums, on the contents of which the lecturer can indent for illustrations to his lectures.

Let me illustrate the last point by reference to two examples taken from the animal kingdom.

The marine gallery of the Museum contains, among other things, a large series of stuffed specimens and skeletons of the fishes which inhabit those parts of the Indian Ocean and Bay of Bengal, which bound the southern portion of the Indian Peninsula. But this series, which constitutes a guide to the fish fauna of Southern India, is supplemented by a series, for the use of students, or those interested in natural history, illustrating, by means of carefully selected specimens, with descriptive labels, to take the place of the text-book, the principal types of Indian fishes, their external anatomy, dentition, adaptation to different modes of life, weapons of offence and defence, etc. When lecturing on comparative anatomy at the Medical College, I have, in the course of a lecture on the osteology of fishes, to make use of such dreadful names as neural and hæmal spines, inter-neural, inter-hæmal, and many others. No mere mouth utterance or diagram can effectually impress the names and position of the various bones on the students' memory, and I have accordingly added to my index collection this skeleton of a big sea-perch, with the various bones labelled. A few minutes spent at the Museum in the company of this skeleton will teach far more as to the names and relative positions of the bones than any amount of preaching on my part.

Here, again, are a stuffed specimen, and a skeleton of a fox-bat or flying fox, such as may often be seen in Madras, roosting on trees, with head dependent, in large colonies, which would form very suitable material for an object-lesson in natural history. The stuffed specimen shows very clearly the broad folds of skin, on each side of the body, which, when expanded by the spreading of the limbs, act as a parachute to keep the animal for a time in the air, and permit it to fly, bird-like, from place to place. The modification of the fore-limbs and breast-bone, connected with this power of aerial fight, is clearly brought out by the labelled skeleton. The sternum, or breast-bone, projects, so as to answer the same purpose as the carina, or keel, of the breast-bone of birds, *i.e.*, to give attachment to the breast muscles, which set the wings in motion. The bones of the fore-arm are very long, and the metacarpal bones are very long and slender, forming the greater part of the hand. The thumb possesses a claw, which is of use to the animal in attaching itself to various surfaces, *e.g.*, when it is roosting on the bough of a tree, or in walking on the ground. The bones of the arm and the fingers, with their muscles, are enclosed between the two layers of skin, of which the wing-membranes are composed, and which they extend and support. The expansion of the wing is effected by the spreading out of the fingers, which radiate from the wrist, like the sticks of a fan. When the animal is not flying, but at rest, the long fingers are drawn together, and the membrane forms folds at the sides of the body. To any one possessing any knowledge of comparative anatomy, it is evident that, though differing in its external form, the fore-limb of the flying-fox possesses a marked homology or similarity in its essential internal structure (skeleton) with that of other animals possessing such different forms as the seal and tortoise, the mole, the higher apes, and man. The skeleton before you might, in fact, form the text of a lecture on the evolution of man, and common ancestry.

I have selected the specimens of the flying fox out of an extensive repertoire, to illustrate the principle that the contents of a single case may not merely constitute an exhibit, to be casually looked at and hurriedly passed by, but may serve as the subject of an object lesson, explanatory of various points in natural history in its relation to mammals, birds, fishes, reptiles, sponges, corals, crabs, starfishes, shells, etc.

With exhibition my duties as a semi-educational official cease, so far as the general public is concerned. But it is for those engaged in teaching the young idea, more especially in elementary schools, to promote one of the principal ends of all museums, namely, the education of the people, and to make use of the extensive teaching material placed at their disposal in the Museum galleries, by there supplementing the routine, and oft time soporific tuition of the school room, by taking their pupils systematically round the museum, and explaining to them, in such simple and entertaining language as they can call into play, the lessons which can there be learned. The modifications of skin to form the horns of sheep and cattle, the antlers of deer, the spines of the porcupine, nails, claws, whiskers, hoofs, bills, and webs; the skeleton of the elephant; the whale-bone whale and toothed whale; the adaptation of the teeth of mammals to different forms of diet, piscivorous (fish-eating), carnivorous (flesh-eating), insectivorous, herbivorous (grass-eating) and omnivorous (adapted for all kinds of food—man, monkeys, and pigs); the life-history of silk worms; corals and coral reefs; suggest themselves to me as a few examples of subjects, worthy and capable of being worked up into interesting discourses.

Not long ago I was vigorously attacked by an unscientific friend for not having exhibited, in the marine gallery, specimens of the seir and pomfret, the two fishes which are most esteemed by the fish-loving European community of Madras. As a matter of fact they were there, but under their scientific names, *Cybium* and *Stromateus*, which my friend did not recognise. I at once set to work, and arranged two cases, in which all the fishes eaten by Europeans in Madras are exhibited under their popular, as well as their scientific names. The criticism of my friend was, in this case, just, but I sometimes wish that my critics would take me into their confidence before they drop on me. Not long ago, a correspondent of a newspaper was down on me for exhibiting a stuffed specimen of a dolphin in the mammal gallery, presumably because there was no space for it in the fish gallery. Had this gentleman come to me, I could have prevented him from making a bad zoological mistake at my expense, and explained to him that the sea, like the land, contains many mammals, which include the dolphins, the whales, and the dugongs. Some years ago, when I was away pearl-fishing at Tuticorin, I received the following stirring telegram from Madras:—"Whale on shore: stupendous spectacle, what is to be done"? To which, I replied "Stuff." On the following day, I received another telegram, announcing that "Whale is a shark," and it turned out to be the rare elasmobranch *Rhinodon typicus*.

Quite recently a hint was thrown out that, among other appliances, the Museum should, with a view to attracting attention to them, exhibit sewing-machines and iron ploughs. Now, if one modern appliance has been more widely advertised, and come into more general use than another among the natives of India, it is the sewing-machine, which any one, who is in the habit of wandering about the country, can see in daily use by native tailors in remote up-country bazárs; and the suggestion as to iron ploughs recalled to my mind the story of the ryat, who was shown a new form of plough, and asked his opinion about it. He said (so the story goes) that it seemed to be a good plough, but was quite useless for this country, because there was no room for the driver to twist the tails of the bullocks.

But, though not in sympathy with the exhibition of sewing-machines and iron ploughs, I fully endorse a recent suggestion that "what is wanted is an institution, to afford, on a small scale, information which will help to develop the trades and industries of the Presidency, similar in objects to that of the Imperial Institute in London, which was founded to foster and develop the commercial and industrial relations of the whole British Empire." I do assure you, Gentlemen, that I have not been blind for ten years to the importance of developing the Museum on these lines, and that I have, clearly mapped out in my head, a scheme which will be put into action, now that increased space is placed at my disposal, for the development of a section, already existing in a rudimentary state, devoted to the illustration of the economic resources and industries of Southern India, and the establishment of what I would call an economic and industrial museum.

The boundary line, which separates art from ethnology, and art from industries, is extremely ill-defined. Such objects as, for example, musical instruments, arms and armour, come, more or less, as much within the domain of art as of ethnology. The tom-tom of this country, the primitive bows and arrows of so-called 'aboriginal' tribes, and the quaint representations of animals in brass made by the hill tribes of Ganjám, belong to the domain of ethnology rather than art. A highly ornamented vina, the richly chased arms from the armoury of the former Rájas of Tanjore, and Tanjore metal swámi ware, belong, on the other hand, to the domain of art rather than of ethnology. The hand-painted palempores of Kálahasti, illustrating scenes from the Rámayana and Mahabarata, possess high artistic merit, whereas imported English printed cloths with debased Indian design are but gross caricatures of their Indian prototypes. Some natives, however, regard the trade mark, which is stamped on imported piece goods, as very high art, and exhibit it conspicuously on the tail or front of the shirt.

The stone carvings on the marvellous sculptures from the Amarâvatî stûpa, the carved doorway from the ruined city of Vijayanagar, the collection of armour, and the contents of the art gallery (more especially the collection of native jewelry) of the Museum afford ample material for artistic design for workers in wood and metal, which is, it is sad to relate, but little availed of by those who should be interested in keeping design up to a high standard. The finest samples of native jewelry, from the collections of the Museum and School of Arts, have been admirably reproduced in the Journal of Indian Art, and there lie buried, while design in native jewelry is steadily degenerating by reason of the replacement of jewelry of indigenous manufacture by imported jewelry of European manufacture. Easy communication between India and far distant countries, and the consequent inrush of globe-trotters gifted, for the most part, with little artistic taste, and ready to greedily swallow the rubbish which is placed before them by itinerant hawkers, are responsible for much that is bad; and it is one of the duties of Museums in India to take a leading part in what is known as technical education, by the exhibition to the general public and those concerned in developing the arts and industries of the country, of the best types illustrative of the local arts and industrial wares, with a view to preserving the indigenous handicrafts and art work from irremediable degeneration.

It is, I believe, a fact that the pioneer of the gold-mining industry in Mysore first had his attention attracted by noticing, in the Bangalore Museum, a modest mineral specimen labelled "alluvial," with a note of the locality from which it was taken; and a recent visitor to the Madras museum, well versed in economic mineralogy, made the remark that the mineral gallery contains hints for the making of several fortunes.

I do not, for a moment, claim, on behalf of an economic and industrial museum, that it can do much for industries which are already firmly established, or that I could, through its medium, teach our leading merchants or planters much which would bring more grist to the mill in connection with large industries such as cotton, indigo, tobacco, coffee, tea, etc. Such a Museum should, however, with a view to directing general attention to them, possess complete collections illustrating each product in the raw and manufactured state, and indicate the extent to which, and conditions under which, they are produced, and their commercial value. But, in addition to the major products, which are already firmly established in the market, there are many minor products which are capable of development, and becoming a source of more or less profit; and to these it is the duty of the Museum to attract attention.

Let me illustrate this point by reference to this specimen of fibre and bamboo scraper. In 1893, I was strolling one evening, with my eyes open, through the Coimbatore bazár, when my attention was attracted by samples of a beautiful white fibre, hanging up for sale in many of the shops. Enquiry elicited the information that the fibre was obtained from the leaves of the American Aloe (Agave Americana) which is grown along the Madras Railway line as a protective fence against stray cattle and other beasts, and flourishes exceedingly in the dry climate of Coimbatore, with its small yearly rainfall of twenty-one inches. The extraction of some valuable fibres is a source of great difficulty, and the Government of India some years ago offered a reward of 50,000 rupees to the inventor of the best machine or process for the extraction of rhea fibre. The Agave fibre is, however, easily extracted by splitting the leaves into four or five pieces, which are beaten with a wooden mallet, and the pulp removed by means of a bamboo scraper. The expense in connection with the extraction of the fibre is, therefore, reduced to a minimum. Samples of the fibre were sent to England for examination by experts, and the highly satisfactory report received that "it is of good roping quality. Value £20-£22 per ton. Fibre equal in quality to the sample would sell readily in any quantity at slightly under the price of fair, current manilla hemp (£23-£24,) and its growth should be encouraged to the utmost."

Turning now to the mineral gallery of the Museum and the lessons to be learnt from it. The system adopted in its arrangement is the exhibition of an index series, intended to serve as a general introduction to the study of minerals, while the bulk of the gallery is devoted to an exhaustive collection of the minerals and rocks of Southern India (the Madras Presidency, Mysore, and Hyderabad). I notice, as a marked sign of the increasing interest in mineral enterprise, that whereas, a few years ago, I rarely received any references relating to minerals, I am now constantly being consulted by those engaged in commercial undertakings, in connection with the economic contents of the mineral gallery, or with the identification and possibilities of minerals sent to me for report. Many there are whose vain hopes I have shattered by a cold-blooded statement that a glistening mineral, which they have sent to me as gold, is "iron-pyrites of no commercial value." On one occasion a specimen was sent to me as a meteorite, which had fallen into a distinguished native gentleman's garden, but I "had the honour" to report that it was a brick.

The development of the mineral resources is, to my mind, one of the most conspicuous features of the last decade, so far as Southern India is concerned. In the first half of the present century, large sums of money were lost in mining for copper in the Nellore district, and the beryl, or aqua-marine, mines of Coimbatore were worked on contract with Government. Old workings, with excavated galleries, at Jungumrazpalli in the Cuddapah district, indicate that extensive mining for galena (the most important ore of lead) was carried on at some former time. The Singareni coal fields are at the present day turning out large quantities of coal annually, and coal has been won on a smaller scale on the Gódávari river. The Mysore gold mines, which, in 1894, turned out gold to the value of 14½ million rupees, have now an established position as gold producers. The Gor-do-norr diamond, which was picked up some years ago by a ryot at Vajrakarur in the Anantapur district, and weighed originally 67¼ carats, was sold to the Nizam of Hyderabad for Rs. 1,65,000. Graphite (plumbago or black-lead), which is used for making lead pencils, polishing stoves, reducing the friction of machinery, and making crucibles, is being worked on a commercial scale in Travancore, and manganese ore in the Vizagapatam district. Attention has of late been directed to the deposits of corundum (which, when red, is the true ruby, and, when blue, the sapphire) in the Madras Presidency and Mysore, as a valuable article of export on account of its possible use for the manufacture of aluminium. Mica (which is commonly known as talc), from the Inikurti mine in the Nellore district, has yielded a considerable profit to the enterprising gentleman who worked it, and there is no reason why still larger quantities of this mineral should not be found in the Nellore district, the Wynád, Mysore, Travancore, and other localities. A rich deposit of phosphatic nodules has been brought to light in the Trichinopoly district, and their value as a fertiliser to crops is being practically tested by planters and manufacturers of artificial manures. Of the iron ores of Southern India (magnetite, hæmatite limonite, göthite, and chromite) magnetite is by far the most abundant. The iron ores of Southern India are practically inexhaustible in amount, and "the scarcity of fuel is the principal — perhaps the only — drawback to the successful development of the iron ores in various districts of the Madras Presidency. The iron industry, which was formerly so extensive, has died out on account of the increasing scarcity of fuel and the importation of cheap iron from England. In several parts of the country we still find slag heaps standing in evidence of a formerly flourishing industry, which is hundreds of years old." Steatite, or soapstone, is widely distributed throughout Southern India, and largely employed in the manufacture of domestic utensils. Messrs. Sugg and Co., it may be noted, reported favourably on a specimen from Maddawaram in the Kurnool district, from which good gas-burner tops were made. Clays, suitable for the manufacture of pottery, are also widely distributed throughout Southern India, but a more accurate knowledge of the physico-chemical composition of these clays is required as the first step towards their employment for commercial purposes, *e.g.*, the manufacture of crockery. Quartz, the most common of minerals, is represented by rock-crystal, smoky quartz, quartz cat's eye (of which the Museum possesses fine specimens from the

Nallamallai hills beyond Cuddapah), and "Vallam stones," which are found at Vallam in the Tanjore district, collected by lapidaries, and cut into various useful and ornamental articles. The Museum possesses specimens, from the Madura district, of the clear and pure variety of calcite (carbonate of alcium) known as Iceland spar or doubly-refracting spar, which is largely used in optical instruments for affording polarised light. Asbestos, which is unaffected by heat, and used for lining iron safes, as a packing for steam-pipes and boilers, and in gas-stoves, is represented in the Museum collection from the Salem district, the Vellore bazár, and Mysore; and selenite, or gypsum, which, when heated, falls to a powder as "Plaster of Paris," from the Anantapur, North Arcot, Trichinopoly, and Madura districts, Mysore, and Hyderabad. Asbestos and gypsum are both valuable economic minerals, concerning the abundance and distribution of which more precise information than we at present possess is required.

Specimens of all these minerals are on the table for your inspection. Enough has been said in the sketch, brief as it is, to show how rich are the mineral resources of Southern India. I notice that the Bengal Government has recently arranged with several mines to enable students in the mining class at the Sibpúr College, Calcutta, to gain practical experience, and have undertaken to pay a premium of Rs. 500 for each boy who is received as an apprentice in the mines. This is a distinct advance in the right direction, and I should, I confess, like to see our Madras students of geology compelled, as a part of their curriculum, to conduct and witness the carrying out of prospecting and mining operations, and equipped with sound, practical knowledge of field-work, and fitted to direct the work of quarrying, boring, digging and searching for, winning, and working minerals.

I gather, from examination of the University calendar, that the history course, prescribed for the B. A. Degree, includes "Ethnology regarded as the science of the formation, distribution and classification of races, and descriptive of their manners, customs, religion, language, mental and physical characteristics; its methods, and main features of its connection with (1) anthropology, (2) archæology, (3) comparative philology. Classification and description on the basis of anthropology of cranial development; facial angles; weight of brain; colour of hair; skin; eyes; term of life; archæology; ancient weapons and implements; pottery; architecture."

Of this mixed group of correlated subjects, I have first a very few words to say concerning comparative philology and archæology. The Madras Museum is, to borrow a phrase once used by Professor Huxley, "a consultative library of objects," which is supplemented by a public consultative library of books; and it is more especially to the latter that you should refer for information, over and above that which is derived from lectures and text-books, in connection with the study of comparative philology, though you will find material for interesting study in the rich collection of copper grants, which have been published, with translations, in the Epigraphia Indica. In the library you will find Burnell's 'Elements of South Indian Palæography,' Caldwell's 'Comparative Grammar of the Dravidian Languages,' the various writings of Max Müller, the 'Epigraphia Indica,' and a host of other works bearing on nearly every known language, ancient or modern. In the pursuit of knowledge of archæology, more especially so far as Southern India is concerned, you will be able to study, in the archæological section of the Museum, those wondrous sculptures from the Amarâvatî stûpa on the Kistna river, which bear evidence of Greek or Baktrian art, and the date of which has been placed in the latter half of the second century; the stone flakes, celts, scrapers, hammers, etc., found in different parts of Southern India; and t' erous objects in iron, bronze, shell and pottery, discovered in cairns and cromlechs on the Nilgiri hills, and in other localities. But your study of the archæological collections should be supplemented by reference, in the library, to such works as Breeks' 'Primitive Tribes of the Nilgiris,' Phillips' 'Report on Tumuli in the Salem district', the publications of the Archæological Survey of India, etc.

Anthropology is divided, according to modern nomenclature, into two main divisions anthropography and ethnography. "The former treats of man and the varieties of the human family from a purely animal point of view, that is, from a structural and functional aspect, while the latter deals with him as a social and intellectual being, and includes enquiries as to his manners, customs, institutions, history, traditions, language, religion, intellectual aptitudes, industries, arts, etc."

The Madras Museum has quite recently become a centre for the study of anthropology (a bureau of anthropology), and I had the pleasure of recording, in my last administration report, that an entirely new departure has been made by the commencement of a detailed anthropological survey of the races, castes, and tribes, which inhabit Southern India. This survey includes not merely the record of anthropometric measurements, but also detailed record of descriptive characters (skin, eyes, hair, face, etc.), personal adornment, clothing, tattooing, manners and customs, religion, ceremonial observances, marriage customs, games, arts, industries, etc. Further, photographs are taken, and collections of jewelry, clothing, weapons, domestic utensils, models of dwelling huts, etc., acquired, and exhibited in the Museum, which will thus become, in course of time, a guide to the anthropology of the Native inhabitants of Southern India, illustrated by objects and pictures.

"The more remote and unknown the race or tribe, the more valuable is the evidence afforded by the study of its institutions, from the probability of their being less mixed with those of European origin." Tribes which, only a few years ago, were living in a wild state, clad in a

cool and simple garb of forest leaves, buried away in the depths of the jungle, and living, like pigs and bears, on roots, honey, and other forest produce, have now come under the domesticating, and sometimes detrimental, influence of contact with Europeans, with a resulting modification of their conditions of life, morality, and even language. The Paniyans of the Wynád, and the Irulas who inhabit the slopes of the Nilgiris, now work regularly for daily wage on planters' estates; and I was lately shocked by seeing a Toda boy studying for the third standard in Tamil, instead of tending the buffaloes of his mand. The Todas, whose natural drink is milk, now delight in bottled beer, and a mixture of port wine and gin, which they purchase in the Ootacamund bazár. On one occasion, I am told, a planter met two stalwart Todas returning from a funeral ceremony, and carrying across their shoulders a bundle, which, on examination, resolved itself into a Toda woman in a very advanced stage of intoxication.

"The rapid extermination of savages at the present time, and the rapidity with which they are being reduced to the standard of European manners, renders it of urgent importance to correct these sources of error as soon as possible." Ample proof can be adduced in support of the fact that European influence, import trade with other countries, and the struggle for existence, are bringing about a rapid change (said from an ethnographic standpoint) among the native inhabitants of Southern India, both civilised and uncivilised. The employment of tiles and kerosine tins in lieu of primitive thatch; the import of cotton piece goods, which represents roughly 40 per cent. of the total import trade, and of umbrellas to the value of over 4,000,000 rupees annually; cooly trade and migration by sea to Assam, Burma and Ceylon; the decline of the national turban in favour of the less becoming porkpie cap or knitted night cap of gaudy hue; the replacement of peasant jewelry of indigenous manufacture by the importation of beads and imitation jewelry made in Europe, and accurately copied, in many instances, from specimens sent to Exhibitions, and purchased by the agents of the manufacturers; the abandonment of the use of indigenous vegetable dyes in favour of the cheaper and more rapidly operating anilin and alizarin dyes; the use of lucifer matches by 'aboriginal' tribes, who formerly made fire by friction; the supply of new forms of food, and of beer and spirits, in the bazárs; the influence of the Government in suppressing thuggi, sutti, the human (meriah) sacrifices of the Khonds, and Toda infanticide; the administration of justice; the spread of education; religious teaching:—these and many other factors are the causes, or signs of, a radical change in the ethnographic conditions of the country.

A Toda lassie curling her ringlets with the assistance of a cheap looking-glass; a Toda man smeared with Hindu sect marks, doing púja, and praying for male offspring at a Hindu shrine; a Bengali babu with close-cropped hair and bare head, clad in patent leather boots, white socks, dhuti, and conspicuous unstarched shirt of English device; a Hindu or Parsi cricket eleven engaged against a European team; the increasing struggle for small paid appointments under Government—these are a few examples of changes resulting from the refinement of modern civilization.

It has recently been said that "there will be plenty of money and people available for anthropological research, when there are no more aborigines;' and it behoves our museums to waste no time in completing their anthropological collections. I, for my part, should not be surprised if, a few years hence, a new "common object of the sea shore" appears in the form of a Toda student, dressed more elaborately than in the tribal cloth, and discussing social and political questions with his fellow students on the Madras marina.

I notice that, at the last B. A. Degree examination in ethnology, one question ran as follows:—Point out the value of (*a*) the hair; (*b*) the skull; (*c*) the face, as distinctions of race. Were I, with my love of practical tests, concerned in the answers to this comprehensive question, I should expect the candidates to show signs that they are not only "almost at bursting under" the weight of book-knowledge, but familiar with the method of determining the facial angle with the goniometer, of practically estimating the most important measurements of the skull, and of measuring that most important member, the nose, with the compasses, callipers, and tape. It has been laid down as an axiom that the intelligence is in inverse proportion to the breadth of the nose; and, when I am investigating the claims of applicants for a clerkship in my office, I am in the habit of scrutinising the nose as well as the hand-writing, though I do not advertise the fact, in the local papers or gazette, that "no one with a nasal index exceeding 78 need apply."

I have, in a rapid summary, given you an outline sketch of the scope and contents of the institution which it is my pleasure and privilege to direct, and which I jealously guard as being, to a great extent, a child of my own creation. It only remains to thank you, Gentlemen, for affording me an opportunity of giving public expression to my views, and to thank you, Mr. Chairman, for presiding over a lecture which has, to some extent, poached on your preserves of Technical Education, which I only yesterday saw ingenuously defined, at an examination, as "the fine arts, the drawing, the painting, the carpet weaving, the making statues, and last, but not least, the short-hand writing."

(Signed) EDGAR THURSTON,
Superintendent, Government Museum.

RDER—No. 454, Educational, dated 1st August 1896.

Mr. Thurston's report on the administration of the Museum has been perused by isExcellency the Governor in Council with much interest. The record of the year's ok is again satisfactory.

2. The number of visitors to the Museum was the highest on record, as was the umber of gosha visitors who availed themselves of the days specially set apart for hem. Of the total number of visitors nearly 43 per cent. were of the female sex.

3. The proposal that the Museum should be open to the public on Sundays has een approved in G.O., No. 310, Educational, dated 19th May 1896.

4. It is noticed with satisfaction that further progress has been made in the nthropological survey of the races, castes and tribes of the Presidency.

5. The total expenditure on the maintenance of the Museum during the year was s. 29,539, which closely approximates to the budget and revised estimates.

6. The Government thoroughly approves of Mr. Thurston's view that the technical and economic side of the Museum should be extended and developed as far as is possible. District officers have it in their power to render the Superintendent material assistance in this direction, and copies of the annual administration reports will, in future, be communicated to all Collectors, who will be requested to draw the attention of officers subordinate to them to the importance of the matter.

7. The thanks of Government are due to the gentlemen named in the report who ve been good enough to add to the attractions of the Museum by gifts of books and ibits of interest.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Superintendent, Government Central Museum.
„ the Director of Public Instruction.
„ the Surgeon-General.
„ the Accountant-General.
„ the Public Department.
the Revenue Department.
„ the Superintendent, Government Press.
„ Collectors of Districts.
Editors' Table.

Endorsement—No. 455, Educational, dated 1st August 1896.

Copy to the Government of India, Revenue and Agricultural Department.

J. F. PRICE,
Chief Secretary.

F/4 300—4-3-96.

Govt. of {1896} Madras.

EDUCATIONAL.

Issued

Recd. *Encl.*

G.O., &c., Nos. 454, 455,
1st August 1896.

AUGUST.

Government Museum.

Reviewing the report on the working of the — during 1895-96. Copy to the Government of India. —

No. 470.

GOVERNMENT MUSEUM,

Pantheon Road, Egmore,

Madras, 15th June 1896.

From

EDGAR THURSTON, Esq.,

SUPERINTENDENT,

Government Museum,

Madras,

To

The Chief Secretary to Government
Educational Department

SIR,

I have the honour to submit to the Right Honorable the Governor in Council my report on the working of the Government Museum during 1895-96, and to request that I may be supplied with 160 copies for distribution to other Museums &c.

I have the honour to be,

Sir,

Your most obedient Servant,

Edgar Thurston

Superintendent,

Government Museum.

F/4 300—4-3-96.

Current No. 765

Educational (1896) Department

From

Edgar Thurston Esqre
Superintendent Govt
Museum

No 470

Enclosure - One
~~packet~~

Dated 15th June
Despd — " — } 1896.
Recd 15 — " —

No 25

Subject

Submitting his report on the working of the Government Museum during 1895-96 and requesting to be furnished with 100 copies for distribution to other Museums etc.

211: 19-5-96 Educ
310: 19-5-96 —"—
292: 14-5-96 —"—
279: 4-5-96 —"—
267: 29-4-96 —"—
266: 29-4-96 —"—
252: 27-4-96 —"—
246: 13-4-96 —"—
208: 2-4-96 —"—
173: 27-3-96 —"—

132: 1-4-3-96 Revenue
136: 9-3-96 Educ
113: 2-3-96 —"—
60: 3-2-96 Sc
22: 15-1-96 Educ
916: 4-12-95 —"—
Pub. 872: 19-10-95 Sc
Revenue 414-14A: 2-7-95 Orgl
—"— 484-84A: 7-7-94 Sc
—"— 478-78A: 6-6-93 —"—

916/95 279/96 D
136/96 D 22/96 D
173/96 310/96
211/96
252/96 60/96 Sc
246/96 22/96
208/96 15/96

[G. / 24.] 700—12-12-95.

Educ DEPARTMENT.

Papers to be read in proceedings:—

Again G.O., dated 189 , No.
Again G.O., dated 189 , No.
Current No. 765 of 189 , dated , from
" " " 189 , " , "
" " " 189 , " , "

38

ORDER. No. 454. Dated 1st August 1896.

P.S.

JG
22/7/96
A.SH
29.7.96

W. Thurston's report on the administration of the Museum has been perused with much interest. The record of the year's work is again satisfactory.

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WP. 25.7.96

Rd 20/7/96

To the Supt. G. Cin. 1 (with 60. s.c.) will be sent by
" Dept. 7
" Surg. General 6
" Accts. General 4
" Public Dept. 1
" Rev. Dept
" Supt. Govt. Press
cost of volume 170

Dest 21/8/96

6 s.c. sent 20/8

Dest 4/9/96

Endt. No. 455. Dt. 1 August

36 Copies
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Copy to the Govt. of In
Rev. & Agric.
Dept.

WP. 25.7.96

Note.

With reference to para 11. of
report the U.S. wrote to Mr. T.
asking whether it was possible
get anyone in India (such
the Reporter on Economic Products
the Entomological Asst. in the
Museum) to study the pests refer
to & suggest means of getting r
of them, and whether it was essen
that they should be studied on
spot or whether the experi
who advise the Imperial Institut
could be of any use in this directio
Mr. Thurston's reply is on the top f
the file of connected Rev. Dept.
papers. He shows that unless the
staff of the Agricultural College
will undertake the work nothing
can be done without a special
Entomologist with transport & plenty of
time. It is understood that

...ead entomologists want another
...available until final orders are
...assed in connection with the
...hole question of the report of the
...ecial Conference. Sir Ed Buchè
...ecial duty. He is not however clear
...ether the Agricultural College staff
...hould not try + do something
...n the matter. They ought to
...have plenty of leisure. Thay ~~orders~~
~~to~~ enquiries be made on
the point.

To do any real good as regards the subject referred to above an expert who can give his whole time to the work is required. He must be in a position when an outbreak of insect pest is reported to go to the district and find out the life history of the particular insect & what if anything the best little good can then be effected. Dr. Thurston's other duties will not allow of him doing this - even if he was competent to deal with the matter which he says that he is not. I do not see how the Agricultural Dept. can do what is necessary further except with a special man. The work belongs I consider properly to the Agricultural Dept.

20/7/16

Report on Govt. Central Museum. -

(for orders)

H.M. & H.E. The Governor

Yes. The work should be initiated at all events by as well paid whole time man. The subject is an important one & should be kept in mind, but the staff of the agricultural college is fully employed, & we can do nothing now.

JG

Let me know if I send R.O. and the rest enclosing copies of the notes about pests herein

W.R. 21/7/16

vide No. 1657 of 15-8-16.

Returned to the Educational Department with thanks. (By order)

A Parthasarathy
Ag Registrar.
for Asg. under secy to Govt.

pest

No. 30

GOVERNMENT MUSEUM,

PANTHEON ROAD, EGMORE,

Madras, July 12. 1896.

My dear Francis.

Yours of the 9th inst raises a very wide question. The life history of the wild beasts recorded in Manual Para II of my Annual Report is known, and information will be found thereon in Indian Museum Notes on Economic Entomology, which contain a heap of facts as to life histories of pests and the treatment

Notes work recorded
in Ind: Museum
Notes was done
from the office chair, as
he was not a training
officer. And that was
the weak spot in his
appointment. I am
convinced that, to get
really valuable and
practical information,
examination of pests
on the spot by some
discreet and learned
person is Essential.

Specimens of
caterpillars are constantly
sent to me, (by the
Rev: Board and
individuals), in spirit-
e.g. the larva referred to

as Arathuchchi in the
Report of my Ann: Report - and
very often it is impossible
to precisely identify
them, and give information
as to what they will
turn into in the more
mature forms. That is a
question of keeping them
alive, and observing
what happens. Take
again the prickly bear
parasites, concerning
which question the
Rev: Board (Res. 135 17
June 1896, which, I
suppose, goes up to Govt.)
"regrets" that I have not
gone into the matter of
destroying prickly bear
by parasites myself.
Fact is, Winterbotham

thereof. The extirpation of a pest, by the way, may be more expensive than the damage done by it. But this is too big a subject to discuss in a letter.

Is not Coles now out of the official coach, and editing the "Indian Daily News" in Calcutta? I fancy he is. If so, he won't come down here economic entomologising; and, if he or some one else does, he won't be of any use whatever unless he makes a very long stay, and examines places badly infected. Pests in loco. Nearly all

No. 34

GOVERNMENT MUSEUM,
PANTHEON ROAD, EGMORE,

Madras, 189

and I decided that collectors should be asked to gather together information, and submit reports. The information thus gained was in response to sundry reminders and an order to "expedite" incorporated by me in a note. The call on collectors I regarded as an initial step in the enquiry and hoped to get some hints as to the lines on which research in definite localities might be carried out. So far, however

information about any particular beast in 'Indian Museum Notes': and if not, and extensive crop destruction is in progress it should, I imagine, lend a competent man to report thereon and advise. This would very likely require a study of life habits and life history. But where have we got such a man? I have examined Saidapet students in Economic Entomology with melancholy results. Govt ought to

expect the best of Agriculture (as in United States), or the staff, or trained students of the Agricult: College to give skilled advice in matters relating to crop destruction. And then, I fancy, the machinery breaks down. I have no time to go into questions of agricultural economics, and am not an Agriculturist. Thereof, I say, my province ends with identifying the beasts, or getting them identified in the Central Bureau at Calcutta.

…ochineal insect.
…oncerned, the reports
…ll us nothing, and
…y are rather barren
…together. Suppose that
…und that certain
…were favourable
…dy of the
…eal-prickly-pear
…ion. I am not the
…man to carry
… investigation,
…will be an
…le one, if it is to
…ny use. My
…nce is, I take it,
…th in identifying
… classifying the
…structive beasts. This
…one the Ag: Dept: could be
…ble to see if there is full

Watt, the Reporter on
Economic Products, has
been lately doing
good work among
Fungi in Assam.
And that is a distinct
advance in the right
direction. Our new
Govt. Botanist will I
hope be able to take
up, as one branch of
his subject, Economic
Botany with respect
to cultivated plants
and vegetable (fungoid)
parasitic diseases
thereof - just as Barclay
(now dead) took up
wheat-rust in N. India.

39

he wont be able 10
to tackle animal
pests and they
come moreover within
the domain of the
Agricult: Dept. Why,
Oh Why does not the
Agricult: College come
more to the fore in
practical scientific
Exploration ??
I should like to
discuss this important
subject with you. As
this cant be done
please tell me if this
is not the sort of
answer you want. No
use applying to Imperial
Institute. The work must
be done out here for
many reasons. Yours sincerely
Edgar Thurston

[G. 73]
500—21-10-95.

42

Ed. DEPARTMENT,

~~Fort St. George~~, 15/8/ 1896.

OFFICE NOTE No.

No. 1657.

Received 17 Aug 96

From

THE CHIEF SECRETARY,

To

THE SECRETARY,

Revenue DEPARTMENT.

In forwarding copy of G.O. no 454 Ed. dated the 1st August 1896, reviewing the report on the working of the Govt Museum during 1895-96, the undersigned has the honour to enclose copy of the Honourable Member's note on the subject of the entirpation of insect pests for such action as may be necessary.

For Chief Secretary.

WA
10/8

Copy of Note on Educational current No. 765 (G
No. 454, Educl., dated 1st August 1896) by the Under Sec
dated 15th July 1896.

With reference to para. 11 of the report ~~of~~
Under Secretary wrote to Mr. Thurston asking whether it
possible to get any one in India (such as the Reporter o
Economic Products or the Entomological Assistant in the
India Museum) to study the pests referred to, and suggest mea
of getting rid of them, and whether it was essential that
should be studied on the spot or whether the experts who
advise the Imperial Institute s could be of any use in this
direction. Mr. Thurston's reply is on the top of the file
of connected Revenue Dept. papers. He shows that, unless th
staff of the Agricultural College will undertake the work,
nothing can be done without a special Entomologist with bra
and plenty of time. It is understood that special Entomolog
won't any how be available until final orders are passed in
connection with the whole question of the report of the
Agricultural Conference and Sir Edward Buck's special duty.
It is not, however, clear why the Agricultural College staff
should not try and do something in the matter. They ought to
have plenty of leisure. May enquiries be made on the point?

Note by the Chief Secretary, dated 20th July 1896.

To do any real good as regards the subject referred
to above, an expert who can give his whole time to the work
is required. He must be in a position, ~~in~~ when an outbreak of insec
pests is reported, to go to the spot at once and trace out th
life history of the particular insect. Without doing this bu
little good can ever be effected. Dr. Thurston's other dutie
will not allow of his doing this - even if he was competent
to deal with the matter which he says that he is
not see how the Agricultural Department can

41

essary either, except with a special man. The work belongs
onsider, properly to the Agricultural Department.

Note by the Hon. Mr. Grose, C.I.E., dated 22nd July 1896.

Yes. The work must be initiated at all events by
a well paid whole time man. The subject is an important one
nd should be kept in mind, but the staff of the Agricultural
College is fully employed, and we can do nothing now.

For 96 No. 454 dy 1st [illegible] 1896

Desp
4/9/96

44

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