uninstructed in such matters as General Applegath, that the rocks of the Palnad belonged in whole or in part to the already established coal-formation of the Peninsula, in competition with that of the Geological Survey, that they were all of Transition or Lower Vindhyan age, the two being as widely separated stratigraphically as are the Oolitic and the Silurian series of Europe. The "fossils" sent by the General in support of his contention were not fossils at all; and his rock specimens scarcely bore any resemblance to the standards to which he referred them. The occurrence of coal in those older rocks would, of course, be an independent question; and although a very extensive survey of them in that very field and in other parts of India had revealed no trace of a coal-measure group, there would still remain the possibility of a local deposit. The question is thus brought within very definite limits of fact, and it would never have taken shape but for General Applegath's assertion that at a particular spot within 20 feet of the surface he had once upon a time quarried coal and burned it.

4. To any one whose ideas on the subject were not altogether in the air, nothing could be simpler than a complete verification of such a statement. It is practically impossible that several tons of coal could be extracted and leave no trace to tell the tale; yet with every appliance of tools and skilled labor, funds and time, General Applegath has never again been able to produce an ounce of any substance that would support combustion. He has, however, never ceased to reiterate his assertion; and his confidence has imposed upon others no better informed than himself; the strong wish for the realisation of his assurance being on both sides the efficient motive of assent. It is a striking instance, and an instructive caution, upon the persuasive influence of unflinching testimony in a credible witness, for no one that I know of has ever cast a suspicion upon General Applegath's truthfulness.

5. In its successive orders giving sanction and encouragement to General Applegath's explorations, ignoring its own previous adverse decisions upon the case, Government did not, of course, give reasons for so doing, but we may safely take these to be the same as those that guide public opinion in the matter. In a Calcutta daily paper of the 28th March last, *a propos* of General Applegath's recent manifesto, it is said—"This case of coal in the Kistna District is probably another instance in which practical men have been ahead of the geological theorists." Nothing but the diffusion of knowledge can remove the popular prejudice that is revealed in this sentence; but as it contains the only approach to direct argument that I have seen, it is of practical importance to point out that the instance referred to as parallel is of a wholly different nature. It refers to the discovery of the coal measures in the north of England by deep sinking through newer over-lying formations. The writer of the article implies that the Geologists were false prophets on that occasion, and no doubt the pit-sinkers were practical men; but in the Indian case the facts are all above board; the rocks at the surface in the Palnád are immensely older than any known coal-measures, and the only evidence to warrant any outlay on exploration is General Applegath's assertion that he once quarried coal there within a few feet of the surface. Surely a practical man would require the General to make good his assertion before starting on [illegible] would otherwise be a wild-goose chase.

6. The acts and arguments referred to imply more or less of credence in General Applegath's frequent animadversions upon what he takes to be the carelessness, the contradictions and the obstructiveness of the Geological Survey. I do not care to exhibit the ridiculous misunderstandings upon which such remarks have been based. Too much time has already been wasted over this tiresome business, and I have shown that the whole question turns upon a simple matter of fact. The supposition that a body of professional men could be so infatuated as to pooh-pooh a project founded on so circumstantial a basis, which, if true, must inevitably be presently substantiated, is only further evidence of the hazy view taken of the conditions. Until this ground had been visited, the survey gave every encouragement to the investigation. It has been said that Dr. Oldham's visit to the Palnád, in company with General Applegath and others, was made in a perfunctory manner. But this again is unfair. Dr. Oldham went to see all that General Applegath had to show regarding the existence of coal,

and finding no vestige of real evidence it would have been foolish of him to sit by while a boring was made in slate on the chance of unearthing a coal seam. Dr. Oldham officially and publicly (Madras G.O., No. 1125 of 27th April 1868,) denied the statement that anything like "burnt shale," or "burnt outcrops," or "a substance rich enough to support combustion," had been seen. Since then, and before it, General Applegath has had ample means and leisure given him to make good the statement that he had once burnt coal extracted from the site in question, but all his endeavours have been in vain.

7. As it is not a ghost story, some intelligible explanation of the mystery must be forthcoming. The most likely one was suggested by Dr. Oldham, that to please their master, the natives had put some real coal in the hole and produced it for his satisfaction. A hoax of this kind was shortly after successfully practised upon Dr. Oldham himself, and all the officials concerned, in the famous case of the Midnapur borings. In the Kistna case, however, there was hardly room for this without culpable blindness on the part of the victim, for the excavation is said to have been a shallow drift, and accordingly General Applegath repudiated the "insinuation," averring that he had himself conducted and seen the operations, and repeating his statement in the following emphatic and expanded form:—"I adhere to my assertion that I have actually quarried and burnt coal in large quantities on the spot, as much as eight or ten tons." —(Madras G.O., No. 606 of 7th March 1868.) There thus remains a cut and dry choice between a physical anomaly (amounting to impossibility) and a case of mental delusion, such as is unhappily of too common occurrence in history. In going through the documents for the present, I hope final, disposal of the case, I have been greatly struck by the fact that General Applegath's assurance becomes clearer and stronger and larger as the event recedes in time.

8. The oldest papers I have on the subject are a manuscript map and two sections with a brief list, all signed "F. Applegath, Lieutenant, Assistant Civil Engineer," and dated "Camp, Moogetalah, 18th December 1850." The map is entitled "Plan of the Marble fields near Jaggiapetta on the Kistna and Pallair Rivers," and with the sections it is colored geologically (after a fashion). There are five pits marked on the plan, and the annexed list is headed "Description of the pits, &c., that have been sunk in searching for coal." One of these pits is at the very place assigned for the coal discovery, on the left bank of the Pallair, about half a mile above its confluence with the Kistna. This pit is figured on one of the sections to the full depth ever said to have been attained there, and the only legend is—"shaft 20 feet through slate with a soft material below, thickness unknown." In the list the same is described as—"Pit No. 3, shaft sunk 20 feet through slate, small but distinct traces of vegetable deposit at the lowest excavation, and a soft white deposit at the bottom of the shaft, thickness unknown." In these original documents the word "coal" only appears in the title of the list as a desideratum; the rock in the pit being correctly noted as "slate," The date usually assigned by General Applegath for his discovery of coal is 1851, so it might be surmised that these notes are anterior, and not to the point; it seems not improbable, however, that they represent the total result of his operations before going on leave when he reported his discovery to the Court of Directors, and, before leaving, to the Madras Government; for the map is endorsed "Lieutenant Applegath's supposed coal sites; from Walter Elliot, Madras C.S., August 1851." If this be the case there would be no escape from the judgment that the quarrying and burning of coal must take rank as a myth, so important a piece of evidence would certainly not have been left out in the contemporaneous account. No doubt many tons of the black slate were excavated, and nothing is more likely than that some pieces of it were put into a good camp fire, after which ordeal they would bear a tolerable resemblance to ash, and such may have been the small basis of fact which has grown so portentously. The samples of this stuff deposited at the Madras Museum would excusably have been thrown out as rubbish.

9. The next evidence tends to confirm this view. It consists again of a colored map and sections, with a report entitled—"Captain F. Applegath's description of the geological strata on the north bank of the Kistna," dated Madras 28th of April 1861.

In this apparently the same shaft is referred to (here marked as No. 1) thus:—"An attempt was made some years ago to sink No. 1 shaft for coal through the red shale in the southern parts of these fields, the red color appears to be superficial, for, at a depth of 10 or 15 feet, the color changes from red to greenish grey, and blue, and sometimes black. * * * * This occurred in 1851." There is no specific mention of the horizontal drift, 17 deep, from which in later accounts the coal is said to have been obtained, but I here find, for the first time, a notice of this circumstance, and only in a casual way as a bygone event and as secondary to what is considered more important observation, thus:—"The limestones, shales, sandstones, and the fossils found, all tend to confirm and strengthen the belief that these rocks of the Kistna are of the age of the Indian coal-bearing strata; moreover, the bituminous rock that I quarried and burnt contained upwards of 30 per cent. of carbonaceous matter." The authority for this determination is not given, but it at least fixes a maximum value for the "coal" of later statements. At all events, in a concluding summary of the case this point is left out of count and the whole question stated as problematical—"All that has hitherto been done has been at private expense, and thus for eleven years the suggestion of the probability or the reality of there being coal on the Kistna has been a source of anxiety of mind on one side, with incredulity on the other, and therefore it is a question still to be decided on its own merits; at least I think there is presumptive evidence of the fact of the existence of coal on the Kistna, for in Bengal the arenaceous shale with fibre-like impressions of plants is coal bearing, also blue shale, and at Nagpore the greenish grey shale overlies bituminous shale and coal, the same in Bengal."

10. After this the inquiry took a more official form. In August 1866 Major Applegath submitted a memorial to Government soliciting aid for further exploration, again urging the identity of the rocks with the Indian coal measures, but the "myth" now takes distinct shape, thus: "I here most distinctly state that on the occasion of one of my visits to the locality I have described on the Pálár and Kistna Rivers, I burnt in several large heaps the coal I had quarried, and that I even carried some and burnt it in the Sherehomedpettah Bungalow compound. I believe that not less than nine or ten tons were quarried and burnt, and that while burning it gave out great light and intense heat, and except that it was much heavier it was not unlike the Torbane hill mineral." Due mention is, however, made of failure to rediscover that combustible rock:—"Having once quarried and burnt the coal on the Kistna, I am not discouraged by my recent failure to reach the coal, and this dear-bought experience will prove invaluable in the next attempt. I am confident that coal exists there, its extent and thickness it is impossible at present to estimate." This application was referred to Dr. Oldham for opinion. Mr. Oldham deprecated boring until some fair evidence of the probability of coal being found should be established, remarking that "it would appear only reasonable to expect that Major Applegath should be able to show where he had quarried the coal, and the expenditure of very few rupees, not one-hundredth part of what borings would cost, would in a few hours prove the existence or non-existence of any bed of coal." He offers to arrange for a geologist to visit the ground in company with Major Applegath. This visit took place in January 1868, Mr. Oldham going himself. He was accompanied by Colonel Applegath, Mr. Stuart, Assistant Collector of the district, and Mr. C. Oldham, who had been for some time engaged upon the examination of the same rocks further to the south. In the report of his observations Dr. Oldham remarked: "After this careful examination, I regret to report that, in my opinion, there is no ground for any hopes whatever of coal being found within this area. The rocks are all of types well known, and covering a very large area of the Cuddapah and Kurnool Districts, and in no respect that I could see do they, in this part of the country, offer any feature which would induce one to suppose that there was a greater probability of coal being found here than at a thousand other localities within the very extensive area over which similar rocks extend to the south, and at some one of which it would, I think, certainly have become known did it exist." As no more of the so-called "coal" or combustible rock could be found, the suggestion is made that it may have originally been provided for the occasion. In

General Order No. 590, dated 5th March 1868, the Government of Madras accepted this report as proving beyond all doubt the non-existence of coal in the valley of the Kistna.

11. At this juncture the episode of the Midnapore coal adventure occurred, raising sanguine hopes that coal might be found anywhere. In April 1870 a memorandum was forwarded by the Madras Government urging further search in that Presidency, saying there seemed no reason why coal should not be found beneath any of the vast tracts of laterite in Southern India as well as at Midnapore. Dr. Oldham gave a reasonable answer (June 1870), explaining the different conditions—how all the measures of the Raniganj coal-field passed eastwards under the alluvium of the Ganges delta, and how impossible it was for any one to say how far they might or might not there spread out to north and south on the buried slopes of the gneissic upland; that there were no analogous circumstances in the lateritic regions of Madras, &c. But all this was as moonshine to the promoters of such a scheme, and a profound distrust of geological insight remained; nor was faith restored when the fiasco of the coal at Midnapore was made known, for had not the geologists been taken in just as others.

12. General Applegath was not slow to take advantage of these favorable conditions. In July 1870 he applied for a grant of money and a detachment of Sappers and Miners equipped with boring and blasting tools for exploration in the Kistna District. The geological affinities of the rocks were not referred to, the one tempting assurance given being that he had once seen coal quarried and burned in large quantities in that district. Approval and sanction were at once accorded (G.O., No. 1024, 15th August 1870). When the two months allowed were nearly expired, an extension of time and an additional grant were asked for on the following plea:—"The Sappers have to this date been employed in opening out the rocks; and as some of the pits are now 25 and 30 feet deep, I am enabled to offer an opinion on the probability of finding coal in this district; and, after a very careful comparison of the Kistna rocks with all the other coal-bearing districts in India, I am most decidedly of opinion that their representatives are found in this locality; I do not mean on the surface of the ground, but that they have been excavated by the Sappers in the present investigation. I have, therefore, to express my firm belief in the existence of coal here, and the prospect of obtaining it, very shortly, from one or more of the pits now being made by the Sappers and Miners under my charge." The request was at once granted (G.O., No. 42, 11th January 1871). The total results of the explorations were submitted in a paper headed "Conclusions," dated 16th February 1871. There is no allusion even to the non-discovery of anything combustible, or to the sanguine hopes so recently expressed regarding coal. There is nothing in the paper but a rambling discussion of a collection of the rocks, attempting to identify them with the Indian coal measures. Colonel Applegath was thanked for his exertions, and the specimens were ordered to be sent to the Geological Department for opinion (G.O., No. 336, 15th March 1871). Dr. Oldham's memorandum (12th May 1871) on these specimens gave a complete demonstration that Colonel Applegath had no rational idea of what he attempted to describe, and pointed out the utter waste of investigations so conducted.

13. In this interval the survey of the great basin of the Cuddapah and Kurnool rocks, of which the Palnád forms the northern extremity, was completed by M. M. King and Foote, as published in Volume VIII, pt. 1. of the Memoirs (June 1872). There had been some discussion as to whether some beds in the Palnád should be placed in the Kurnool or in the Cuddapah series of transition rocks, but no possibility presented itself of any belonging to the Gondwana system, although of course the Surveyors were fully informed of the coal controversy. This transition basin is the area which General Applegath now presents as likely to become the largest coal-field in India. From there Mr. King went northwards and at once identified the coal measure rocks in the Singareni field, and found coal there.

14. Nothing daunted, and absolutely impervious to professional criticism, General Applegath, in September 1873, submitted to Government another map and description of the Jaggayapet district, with suggestions for further borings for coal, and a note on some diamond strata in the neighbourhood. It is simply a repetition of all the old fallacies and assertions, giving names to the imaginary fossils and impossible correlations to the rocks, with heroic composure as if nothing had ever been said to the contrary. The papers were ordered to be printed and circulated; twelve copies to be furnished to Colonel Applegath, with the best thanks of Government for the valuable information they afford (G.O., No. 1020, 30th September 1873). I happened at the time to be officiating for Dr. Oldham, and I was called upon by the Government of India for any remarks I might have to offer. My answer may not have been forwarded to Madras. In March 1874 I submitted to Government a detailed note on this map by Mr. Foote, who had surveyed that ground; his remarks would satisfy any one having some knowledge of geology. In April 1874 I had the pleasure of an interview with Colonel Applegath on his way through Calcutta prior to leaving India. He informed me there was a proposal on foot for a renewed search for coal in the Palnád by the Public Works Department; and as he expressed himself satisfied in every way with this arrangement, I got him to mark on his own map the spots at which he most desired borings to be made. In the hope of putting an end to this tiresome craze, I forwarded these indications to Government, recommending that the borings should be undertaken when Mr. Vanstavern could be spared from the borings in the Bedanól coal-field in the Godávari District. Mr. Vanstavern's account of his operations was submitted by the Superintending Engineer, Major Hasted, R.E., in whose report the following remarks occur: "The instructions conveyed have been fully carried out, and even more borings than were directed have been made. Mr. Vanstavern remarks that 'no coal-bearing rocks nor outcrops of coal or any combustible matter was met with,' and expresses his opinion that 'by the nature of the rocks there certainly cannot be any coal.' It is with some regret that I am obliged to express my entire concurrence in Mr. Vanstavern's views, but the explorations have been so complete that I feel sure if coal existed at all in this place, some signs of it must have been discovered. The borings have been made as close as possible to the pits dug by Colonel Applegath, and in every instance have been sunk considerably below the bottoms of the pits; in addition to this Mr. Vanstavern, at my request, cleared out the horizontal shaft in which it was understood Colonel Applegath found something resembling coal which he was able to burn, but nothing was met with except shale. I am puzzled to know what the substance was which Colonel Applegath supposed to be coal, but some of the stuff brought up from the borings which is described as 'black clay shale with graphite' and 'dark brown clay' might, it appeared to me, be supposed to be taken from the immediate neighbourhood of coal. My own opinion is of little value, but I am anxious to state that I watched the operations with much interest, and was rather predisposed to think Colonel Applegath's views were correct. I believe I may say that, up to a certain point, Mr. Vanstavern seemed to agree with me, but after several borings had been made, and the country round explored, he informed me that he had little or no hope of finding coal." On this report His Excellency the Governor in Council declared himself to be quite satisfied as to the completeness of the investigation carried out for the exploration of Colonel Applegath's supposed coal-field on the Kistna (Madras G. O., No. 761, 18th March 1875).

15. Not so, however, General Applegath; as indeed might have been expected from the obduracy he had formerly exhibited in the face of previous ample refutations by himself and others. In the letter under reply and the annexed statements * made before the Society of Arts, as well as in the newspapers, General Applegath protests against the insufficiency of this examination, and declares his position as a discoverer of coal in Madras to be unshaken. His words imply that these trials were made by the Survey Department, but that is an error; no Survey officer went near them; they were made by officers of the Public Works Department, who declare their initial persuasion to have been favorable to his view. As already stated, I do not notice General Applegath's frequent and now

* Returned herewith.

recurring misrepresentations of quotations from the reports of the survey, as they evidently proceed from his complete ignorance of the subject; but it would be impossible to make a like excuse for his misrepresentation of the simple facts of these trials. In a letter to the *Madras Mail* he says: "I was in England at the time these borings were made, and so I could not have selected the sites." This is something more than a *suggestio falsi;* the indication of sites for borings by marks on the map of ground well known to the marker is a completely recognised act of professional responsibility. He objects that at one of his localities three borings were made, only to depths of 7, 8, and 23 feet; but he omits to mention that all three came upon metamorphic rock. He objects that all the places he had recommended were not explored: this would indeed have been a trial of patience, and a culpable waste of time after the principal places, those selected by himself, had proved complete failures; one of these indeed should have sufficed, the one where coal was said to have been once extracted. Four borings were made at this spot, all deeper than any of the original pits; but what is most important, the actual drift from which the supposed coal was obtained was opened out and explored, but no vestige of combustible matter was found. There is no remark offered upon this collapse. I have no doubt whatever that a jury of practical men would give an unanimous verdict of proven against General Applegath's coal in the Palnád.

16. One very interesting observation in General Applegath's remarks to the Society of Arts remains to be noticed, as it throws much light upon the mystery that attaches to this romance of coal on the Kistna. I pointed out at the beginning that the General's cheval de bataille throughout the whole contention has been his assertion that once upon a time he had quarried and burned coal on the spot, where now it has been shown no coal exists. But for this unmistakable evidence he would never have been listened to; in fact, he did not obtain a practical hearing until he mounted this charger in full panoply. In the original contemporary documents there is no mention of this discovery; in the unofficial report of ten years later it is quoted as a combustible rock having 30 per cent. of carbonaceous matter; but in the official memorial of 1866 it has become coal giving out great light and intense heat. This is the familiar process of genesis of the myth; and such I take General Applegath's coal to be. In paragraph 7 of the printed "Record of the Kistna Coal" there is another very neat and instructive example of the same kind of performance; the old steed having broken down, a fresh one is trotted out from the depôt of memory. Of the black clay from Mr. Vanstavern's boring No. 6 it is remarked: "I believe that this black stuff is coal that has been partially burnt, as it has the appearance of coke, or burnt coal, and under a magnifying glass it presents every appearance of coke, or burnt coal, and, when ignited, *burns like a coke fire.* It may even be a natural bed of coke." I am not aware that any of this clay was sent to General Applegath, but that would not signify, it is assumed, to be the same as some black stuff he had once thrown into a fire and beheld to become red hot. The General evidently walks by faith: in a letter to the *Overland Mail*, to refute the conclusive evidence of Mr. Vanstavern's borings, he remarks: "Quite on the contrary, the very important question of coal or no coal near Juggeapettah may (D.V.), I believe will, be definitely settled in the affirmative, if a little trouble can now be taken by the authorities in Madras." It would be sacrilegious to gainsay this final appeal to Providence, but I think the game is played out.

No. 100.

ORDER—dated 15th August 1882, No. 2096 W., Public Works.

On consideration of the letter from the Superintendent, Geological Survey, above recorded, the Right Honorable the Governor in Council is satisfied that it would be useless to further pursue the inquiry as to coal in the Kistna District, and will therefore not be prepared to re-open the question.

2. Copies of these papers will be forwarded for the information of the Secretary of State and the Government of India. They will also be communicated to the Superintendent, Geological Survey, and placed at the disposal of the Press.

(Here enter No. 2097 W., dated 15th August 1882.)

(True Extract.)

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

To the Superintendent, Geological Survey.
" the Superintending Engineer, Second Circle.
" Major-General Applegath.
" the Public Department.
" *L. E for Railways* ——

No. 101.

ENDORSEMENT—dated 15th August 1882, No. 2097 W., Public Works.

Copy of the above forwarded to the Government of India.

Colonel, R.E.,
Secretary to Government, P.W.D.

Exd. A. F. Goodall.
Spare Copies

BUILDINGS AND RO.
CIVIL WORKS.

Govt. of {1882} R
PUBLIC WORK

Dated August, 15th.

Recd. *Encl*

G.O., 15th Aug. 1882, No. 2097 W.

AUGUST.

Nos. 99—101.

Coal in the Kistna District.

FORWARDING copy of Proceedings deciding not to re-open the question regarding the existence of —.

Copy

Colonel R. H. Sankey R.E.
Secretary to Government P.W.D.
Madras

Sir,

I shall esteem it a favor if you will be kind enough to convey my thanks to His Excellency the Governor for allowing the most recent despatches about the prospects of coal for Madras to be sent to me in England, I think I was warranted in believing that His Excellency has some belief in the truth, and integrity of my own efforts to verify and even the Coal now lying dormant in the Kistnah District.

2. The Geological Survey in 1868 reported unfavorably on the Kistna District for coal measure rocks, and coal; but on 7th June the Superintendent wrote to the Madras Government to withhold their unfavorable opinion of no coal for the Madras Presidency - "As important Coal discoveries were being made over an area unknown Geologically" and ever since that time (June 1871) discoveries or rather verification of coal bearing

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strata have continued to be made till 1881 When in volume 8, Part 3, with map, a coal field of about (400s) four thousand square miles, with about 400. square miles of the most Southern part of this great Coal Field, actually situated in the Kistnah District proper, or at least in territory that belongs to the Madras Government; Still the latest Geological Survey published records hold out no substantial grounds for either good or thick Coal in this locality.

3. The Indian Coal measure strata shown in maps to Parts 1 and 3 of volume 16, is now brought down to South Latitude 16°. 53' in the Eastern part of the Kistna District and the Goondwana series of rocks also (Coal measure rocks) in which the South Rewah seam of Coal 17 feet thick at Umeria was telegraphed to England in the Times - 10th April last, has been traced for more than 100 miles to the South of the above named latitude, in this same Kistnah District

4. The only borings for Coal actually made in the Kistna District are described in Proceedings of Madras Govt - 18th March 85 a short resumé of them is noted in Paras 6, 7 and 8 of the accompanying

memorandum about Coal which I read before the Society of Arts on 21 April 1882. In reference is made to my letter 30th September 1873, wherein I had taken the liberty to make suggestions for Coal borings, it will be seen that several horizontal borings were recommended for reasons given, and that vertical borings were particularly suggested for like reasons, and certain other rocks should have been , and that the tin crushed or burnt outcrops of Coal should have been examined, these are all marked in my Map. In the Gherriah Coal Field, Bengal, 13 seams of Coal were found burnt, and in Raneegunj, a thick seam of coal was burnt to such an extent, as to cause of a subsidence in the ground of 200 square yards, this subject has attracted considerable notice, in Bengal, though passed over in silence, when Madras was interested in its investigation.

5. In the Proceedings of Government dated 7 Sept 1887 sent me, allusion is made to memoirs, Geological Survey, Volume

8, Part 3, where at page 92, marginally noted the settling of the coal questions for the Madras Presidency "It has only been within the last few years that the Govt or the Public has been reconciled to the fact that the only coal in the Madras Presidency is that contained in the few patches and outliers of Barakas sandstones, situated in the Godavery District and the adjacent country of the Nizam".

6. The above conclusion or report is so diametrically opposed to my belief and experience that I feel bound to write a strong remonstrance against it. It has been written by a member of the Geological Survey, Mr. W. King, A.B. F.G.S. Deputy Supt, Madras, who has visited the Juggiapettah district, and when he was there, acknowledged in the following words his inability to solve the Geological problem, he had set himself to work out. See Vol 8 - Part 4 - Pay 259. "It will be shown presently how these peculiar instances of superposition and resemblance render the Palaud (Juggirapettah District included) or extreme North Eastern Field of the Kuddapah and Kurnool rocks a perfect puzzle in the attempt to correlate its strata of which Mr. Foote and I are only able to advance very doubtful solutions." Should here take the liberty to enquire why, if Mr. King was in such doubt about the Geological formations of this district, he should invariably have expressed such confident opinions against the existence of coal.

7. The coal measure rocks of the Juggiapettah district about 44 in number which from time to time I have discovered, reported on, and sent specimens to Madras, though extending over only 50 Square miles will, when properly examined, show most clearly their importance by producing coal, with water carriage to Madras, and I believe will eventually develope themselves into a Coal Field of great extent, see Map to Vol 8, which will be largest coal field in India and with a probable extension to within 30 miles of Madras. I mention this as a very probable

outcome of the thorough examination of the Jeggiapetta District which is only the extreme North East corner of the map to vol: 8 and in Part 1 Page 60 of the Manual of Indian Geology, this extensive crescent shaped Country surrounded by Gneiss rocks is estimated to contain 13.500 square miles.

Yours etc

Sd/ Francis Applegath
Major General
Madras Retired List

19th May 1882
24 Bloomfield Street
London W

C No earlier
13/6
F.W.C. No 3889.
Enclos 1
+ enclosed in
No 230 Ext 13/6

Kept a copy

No 230. Ext. dd 13 June 82

To
H B Medlicott Esq
M.A
Dep. Geolog! Survey of India

Sir

Having by the last mail received the annexed letter dated 19th May, with printed slip of remarks made by the writer, dealing Annual & Applegarth, on the subject of certain alleged discoveries of Coal in the Nellore district I have the honor to forward the same for such remarks as you may desire to offer in regard to my submitting the same for the information and orders of the Govt

2 As I have previously Lieut- Gen Ex Superintendent of the records in

Ofc 9/6

Ofc 9/6 Despd

any Steps with a view claiming the Lominis at present in dispute you will probably be in a position to deal fully with this question but should you require further information on the subject I shall be happy to supply the same if available

Att

10/6/02

Precis of correspondence in connection with the supposed discovery of Coal in the Kistna District.

Mr. W. Elliot the Commissioner of the Masulipatam District in his letter of the 4th January 1851 reported that the enquiries made into the productions and recources of the country in communication with the Central Committee for the Exhibition of 1851, elicited a proposal from Lieut: Applegath to be allowed to expend Rs 50 in exploring the recources of the Kistna Dt, which was sanctioned by the Central Committee on the 1st

June 1850.

In the course of his researches Lt. Applegath met with indications of coal in the neighbourhood of Juggiahpettah, and submitted a further request for an advance of Rs 100 to be devoted to the search for this particular article. This request was referred by Mr. Elliot to the Central Committee who replied that it appeared to be a matter for the consideration of Govt.

Mr. Elliot further observed that Lieut. Applegath since then twice reported the increasing signs of the existence of coal in the bed of the Sallair near its junction with the Kistna, and in the Nizam's territories at Nulgoondah 40 miles beyond the frontier from whence he had specimens of a fine description of coal had been brought to him.

Under these circumstances Mr. Elliot recommended sanction to the small advance solicited by Lt. Applegath, and forwarded specimens bearing a strong resemblance to anthracite coal.

Go. 15th Feby 1851 No. 156.
Rev. Dept.

The Govt. observed that they could not suppose that any effectual search for coal could be prosecuted at the small outlay solicited by the Commissioner, and that they would be prepared to authorise a larger expenditure for the purpose if there existed good grounds for believing that the enquiry would be successful, but that the information before them was not sufficient

to enable them to arrive at a conclusion upon that point. and the Honble Court of Directors were informed accordingly.

Genl. Letter dy 13th Nov. 52 No. 62 Revs. Deptt

With their despatch No. 30 of the 6th Octr. 1852 the Honble Court of Directors forwarded copy of a letter from Lieut. Applegath bringing to notice certain indications observed by him which led him to believe that coal and probably gold may be found in portions of the Masulipatam District. A copy of this despatch and of its enclosure was forwarded to the Commissioner for the Northern Circars with a request that if he considered it advisable he would suggest the course which should be taken, with the view of ascertaining satisfactorily the existence of

Gd. 15th Feby 1853 No. 171 Revs. Deptt.

General letter dy 20th April 1853 No. 18. Revenue.

coal and gold in the vicinity of the Kistna in the Masulipatam District. and the Honble Court of Directors were informed of the action taken on their despatch.

In reply Mr. Elliot the Commissioner of the Northern Circars stated that shortly after January 1851 Lt. Applegath was supplied from a private source with the means of prosecuting his search, and the Civil Engineer of the Division furnished him with boring tools and two or three men of the Native Sappers to work them. Several shafts were sunk and numerous specimens collected which with sections and plans of the tract examined were forwarded to Mr. Siddington, Curator of the

of the Dept.o of Economic Geology in the Museum of the Asiatic Society, Calcutta. who reported that Coal could not be expected in association with the minerals submitted, and that the supposed fossil impressions of shells & plants on which Lt. Applegath chiefly relied were not organic remains.

With regard to the existence of gold Mr. Elliot said that he had no information nor could he learn from more recent enquiry that it is found in Masulipatam even in small quantities. he also reported that the tract of country indicated by Lt. Applegath contains the diamond deposits specially reserved by the Nizam. and after explaining the presence of gold in bars in the District, Mr. Elliot observed that the only means by which the existence of the precious metals in quantities sufficient to repay a systematic search could be ascertained, is by the employment of a practical and experienced Geologist, and that the speculations of amateurs commonly lead to useless expense, and end in disappointment. If it should be considered desirable to follow out the indications of their occurrence observed by Lt. Applegath, Mr. Elliot recommended that the work should only be entrusted to an experienced Geologist.

The Govt. observed that under the circumstances represented by the Commissioner it appeared wholly useless to carry on any further enquiry into the matter of

Go. 9th May 1853 No. 520
Rev: Dept.

Lt. Applegath's communication, as that officer seemed to have addressed the Hoble Court without having any real grounds for the expectations he held out, and without any practical knowledge of the subject he considered himself qualified to treat of - and they agreed in the observation made by Mr. Elliot that the speculations of amateurs commonly lead to useless expense and end in disappointment. The Hoble Court of Directors were informed accordingly - and they in reply said that they agreed in the conclusion to which the Madras Govt. had arrived that no practical advantage was to be expected from a further prosecution of the enquiries

General letter a/ 25th. Octr./53 No. 67 Revenue.

In his letter of the 13th. January 1855 Lt. Applegath

Gl. 19th. March 1855 No. 377 Public.

reported that the specimens from near Juggialpettah in the Masulipatam Dt. bore a great resemblance to those of Mirzapore in the Bengal Presidency, where he said that he had heard that the Govt. were perfectly satisfied of the existence of coal - The shale he said was bituminous and more so even than that from Mirzapore - He also stated that during his stay in England he proceeded to the "Coal Fields" in South Wales, and was fully persuaded that where the coal was worked in an open patch there was great similarity between the shales - and after stating his firm belief that there are many valuable minerals &c. in the Masu

patam Dt., Lt. Applegath offered to proceed to the spot, and applied for the use of a pump, and the services of a small detachment of Sappers. He also asked for a sum of Rs 500 to defray the expences of the working coolies.

The Govt. in reply observed that the report of Mr. Piddington the Curator of the Museum of Economic Geology at Calcutta is very unfavorable to Capt. Applegath's views, and that unless Capt. Applegath can shew some stronger grounds for retaining his own impressions as to the existence of coal on the banks of the Kistna, Govt. would not be warranted in incurring what appeared to be a useless expense.

G.O. 30th Janr. 1855 No. 151
Rev: Dept.

Lt. Applegath expressed his regret that Govt. did not consider the grounds advanced by him regarding the existence of coal near Juggiahpettah sufficient to warrant an outlay of Rs 500 to prosecute the search. He said that he was so thoroughly convinced of the existence of coal in the locality named above that he was ready and willing to conduct the search at his own expense, if Govt. would simply accord him a free passage to Masulipatam by the Steamer, and the assistance of a Nagine and three Sappers properly equipped with tools. In conclusion he pointed out the loss he would incur in the event of failure, while the Govt.,

though they would receive the full benefit accruing from the discovery, if successful, risked nothing- and he expressed a hope that the Govt. would do him the justice of giving him credit for having given the subject deep and earnest consideration. In reply the Govt. informed Captain Applegath that they appreciate the zeal which had induced him to make the proposition above referred to - but they observed that after full consideration they could not see any reasonable probability of a successful issue of the proposed undertaking, and they therefore declined his offer.

Gn. 12th March 1855 No 296
Rev: Dept.

Extracts of correspondence regarding the investigations conducted with coal in the Kistna Dt.

In October 1861 Lt. Col. Hovelay, the then Chief Engineer, in forwarding for inspection of Govt. two specimens of coal from the mouth of the Tal, a tributary of the Godavery, 130 miles above Dowlaishwaram, and 10 miles from Dumagudium, suggested the appointment of Captain Applegath to follow up the investigation commenced under Captain Haig's directions. These specimens were forwarded by the Govt. to Mr. Foote of the Geological Survey of India for his opinion.

Gn. 1969 a/11th Octr. 1861
R.D.

Mr. Foote reported as follows
"Specimen No. 1, is a shale with
"a trace of bitumen, it burns
"very badly and leaves between

"fifty and sixty percent of ash,
"intrinsically it is of no value
"whatever". "Specimen No. 2
"is apparently "Signite" or im-
"perfect coal containing from
"thirty to thirty five per cent
"of ash, it burns however
"freely and gives off a large
"volume of gas. Although on
"account of the great quantity
"of ash it can never be of
"any value as a fuel, it
"might perhaps be desirable
"to test its gas-yielding ca-
"pabilities on a fair scale,
"if a sufficient quantity were
"easily obtainable." and the
Govt. while considering it
unnecessary, therefore, to em-
ploy a special officer to
search the affluents of
the Upper Godavari, re-
quested the Chief Engr.
to endeavour to obtain
a further supply of the
mineral No. 2, in order that
its gas-yielding capabilities
may be further tested.

Go. 2146 of 9th Novr. 1861
R.D.

In January 1866 Major Applegath reported to Govt. that specimens of the rocks that accompany coal in the Damoodah and Adjai coal fields near Kanigunj in Bengal, received from Professor Oldham, are in many instances identical with those found by him on the banks of the Kistnah and Palair rivers in the Masulipatam Dt., within the limits of Govt. land, though closely adjoining the Nizam's territories, and suggested the opening out of a few quarries and pits with an efficient boring apparatus; but the Govt. refused to take any action in the matter unless furnished with the specimens alluded to as found by Major Applegath, for examination by Mr. Oldham.

Go. 260 of 30th Jany 1866.
R.D.

In August Major Applegath forwarded a Memorial requesting the favor of a further investiga

tion of the subject of Coal on the Kistna, and permission to make borings near the junction of the Palair & Kistna rivers, south of Jugiahpettah village, in the Masulipatam Dt.

G.O. 3383 a/14th Decr 1866. R.D.

- this the Govt. referred to Mr. Oldham, with a request that he would favor them with his views on the subject.

In the same year the Supt. Govt. Central Museum submitted a summary of what was known regarding the probability of finding coal in the Madras Presidency, and the Board of Revenue forwarded the repots of Collectors showing that no traces of the presence of coal had been discovered in any district of this Presidency, except in the Kistna, where Major Applegath was reported to have found coal which easily ignited,

G.O. 3424 a/19/12/1866. R.D.

near the junction of the Mynneru and the Kistna. Copies of these reports were forwarded to the Secretary of State, and communicated to the Supt. Geological Survey.

In his letter No. 549 of the 9th January 1867 Mr. Oldham in reporting on the memorial of Major Applegath stated that his own conviction, from the most careful enquiry and examination of all the specimens he could get access to, was so strong, that coal in any workable bed did not exist in that part of the valley of the Kistna, that he had not up to that time considered himself justified in diverting, from the systematic progress of the Geological Survey, any of the staff for the special examination of the Kistna,

but as he considered it highly desirable to put at rest all such reiterated statements, and to determine whether they be based on some misunderstood resemblances in color, &c., of the rocks, or whether they be entirely supported by facts, he intimated that he had made arrangements that this part of the country should be visited by one of the staff of the Geological Survey — familiar with the coal rocks of India.

Meanwhile as there was nothing to justify the expenditure which would be incurred by boring, he suggested that small rewards might be offered to the inhabitants of the place to induce them to make known any deposits of coal.

His report was communicated to Major Applegath and the Collr. of Kistna by the Govt., who intimated that they would arrange for Major Applegath accompanying the Geological Surveyor as soon as they are informed when the exploration will be made.

The Govt. also resolved to place the sum of 500 Rupees at the disposal of the Collector for distribution in rewards for information, as suggested by Mr. Oldham, and requested that gentleman to communicate with Mr. Thornhill as to the best means of employing the money usefully for the object in view.

The Collector of Kistna in reply stated that Mr. Stuart, Head Asstt. Collr., who had made geology a study, — offered to proceed to Jaggiapett and collect specimens of all the rocks in the vicinity, as

GO. 296 a/2 Feby 1867 RD.

well as to thoroughly explore the ground in anticipation of the arrival of the member of the Survey, and that [illegible]

small rewards for the discovery of coal had repeatedly been offered without result, he had placed works at Mr. Stuarts disposal with a request that he might proceed at his leisure to examine the ground - These proceedings of the Collector were approved by the Govt.

G.O. 572 of 8th March 1867.
R.D.

In his letter No. 15 of the 17th May 1867 the Collr. of Kistna forwarded a copy of a report from Mr. Stuart in which he stated that he had visited the villages in the neighbourhood of Jaggiapetta, but could not learn that anything was known on the subject to the natives - a reward of Rs 20 was offered by him but without success - He also made a collection of specimens from all the rocks in the neighbourhood, and an index referring to the places where they were found, as well as a Geological Map of the country - the last two were forwarded to Mr. Oldham and the specimens arranged in his office - He further reported that he dug in several places, as indicated by Major Applegath, but was soon obliged to stop by coming to water - and that he nowhere found anything to lead him to hope for success - A considerable quantity of soft white rock which would be suitable for the manufacture of porcelain was found, and

he proposed to forward specimens of this to Dr. Hunter for trial at the School of Arts.

This report was communicated to Mr. Oldham, the Board of Revenue, the Curator of Govt. Museum, Dr. Hunter and Major Applegath - and Mr. Stuart was informed that the Govt. were much obliged for his report.

G.O. 1231 a/31 st May 1867.
R.D.

Major Applegath, in acknowledging receipt of the above report, remarked, that he believed Mr. Stuarts views to have been gathered solely from a surface inspection of the country, as no apparatus for boring or blasting accompanied that gentleman, and that there is no information as to the nature of the rocks beneath the surface. He further stated

that one important feature in Mr. Stuarts report is the tessalated quartzite or tessalated sandstone which he mentions having met with, and which Major Applegath observed is a constant accompaniment of, and is invariably found in close proximity to, coal in India in the Raniguni, Cuttack, and Nagpore districts. In conclusion he requested that Govt. might place the sum of Rs 300 at his disposal solely with the view to enable him personally to visit the Calcutta Museum, and then proceed to the coal fields at Raniguni, where he might make a collection of rocks & fossils for useful reference on the Kistna.

Mr. Medlicott observed with reference to Mr. Stuarts report on the Geology of

the

the country in the neighbourhood of Juggiahpettah, that he was quite unable to see upon what grounds a hope was ever based of finding coal in the area described, and that it seemed a vain expense to sink holes at random in search for it, until some positive indication of coal be found in the district. He also remarked that Mr. Stuart's observations throw little or no light upon the special object of search, and suggested that the enquiry might be suspended, until the method of rewards (by far the most likely one) lead to the discovery of an actual out-crop of coal.

These papers were communicated to the Collr. of Kistna with a request that he would make it generally known in the localities indicated by Major Applegath that rewards will be given for information leading to the discovery of any deposit of coal. The Govt. remarked that this method of employing the sum placed at the Collector's disposal is more likely to produce some practical result than that suggested by Major Applegath.

G.O. 1482 a/3 July 1867. R.D.

Mr. Oldham in December of the same year intimated his intention of visiting Juggiapettah in the ensuing month (January), and requested that Major Applegath might be permitted to accompany him, to point out the exact locality where he states the coal was found. In the same letter he acknowledged receipt of Mr. Stuart's report and remarked that it only tended entirely to confirm his previous idea that Major

Applegath had been misled in the opinion he had formed. This letter was communicated to the Military Dept. with a request that Major Applegath might be permitted to accompany the Supt. of the Geological Survey in his examination of the supposed coal formations in the Kistna Dt. and the Collr was at the same time requested to arrange for Mr. Stuart also accompanying Mr. Oldham.

The Military Dept. in their No. 83 a/ 9th Jany 1868 intimated that the Officer Commanding Northern Districts had been directed to permit Major Applegath to accompany the Supt. of the Geological Survey in his examination of the supposed Coal formations in Kistna Dt., and the Collr of Kistna

G.O. 2998 a/ 16th Decr 1867. R.D.

G.O. 146 a/ 18th Jany 1868. R.D.

was requested to inform Professor Oldham accordingly.

Major Applegath in his letter of the 6th January observed, that, to alter Mr. Oldham's impression, boring or blasting operations would be necessary, which he estimated to cost about Rs 150, and requested authority to use tools &c., and receive assistance from the Bn. Dept. at Bezwarrah. He further requested orders with reference to his travelling expenses.

The Govt. in reply stated that they would be prepared to sanction such expenditure as may be necessary to enable Major Applegath on the spot to place before the Supt. of the Geological Survey the evidence on which he assumed the existence of Coal near Juggiapettah; and the

R.D. G.O. 132 a/ 17th Jany 1868. R.D.

P.W. Dept. were requested to afford such assistance as may be required.

G.O. 244 of 23rd Jany 1868 P.W.

Major Applegath was also informed that the Govt would be prepared to pass the amount of his expenses, and such sum as would cover the loss of his allowances while absent from his Regiment.

Mr. Oldham in his letter of the 12th Feby. reported that he visited, in company with Mr C. Oldham, the Deputy Supt. of the Geological Survey Col: Applegath and Mr Stuart Juggeahpett and all the localities in the vicinity, which Col: Applegath thought deserving of examination, including the places where he had originally excavated, and after a careful examination found that there was no ground for any hopes whatever of coal being found there. He observed that the rocks are all of types well known, and covering a very large area of the Cuddapah & Kurnool Districts, and in no respect offer any feature which would induce one to suppose that there was a greater probability of coal being found there than at a thousand other localities within the very extensive area over which similar rock extends to the South. He further remarked that he should not have felt justified in expending a single rupee in sinking or blastings, and that such was not necessary for the sections were well exposed and there was little difficulty in tracing out the successive beds. but that Col: Applegath did, in part, open out the old sinkings without result. With regard to the point as to what the

substance burnt by Col. Applegath in 1851 really was he observed "I do not "hesitate to accept in its in- "tegrity the statement that "something was brought to him "which burnt freely. It is by "no means a novel trick for "persons employed to make "sinkings for coal to endeavour "to stimulate the research, and "so increase their own profits "by themselves providing the coal, "which they subsequently raise "from the pit in presence of "their employers - Or it is just "possible that, at some depth "in the thick deposit of fine "muds, which fill the bottom "of the gorges, through which "the smaller streams pass "to the Kistna river, some "mass of sub-fossilized "vegetable matter may have "been found, analogous to "those which have often "occurred at depths in

Go. 590 of 5th. March 68 R.D.

"peat bogs." The rocks are "all without exception of "formations long anterior to "the age of the coal-bearing "rocks of India, and they "are of lithological types, and "in mineral condition (highly "metamorphic) inconsistent "with the idea of coal "occurring with them."

The Govt. regretted to learn from the above report that the non-existence of coal in the valley of the Kistna was proved beyond all doubt - but they observed that the examination of the locality has been useful in so far as it disposed of a question of much importance which had for years been pressed upon their notice. Mr. Oldham and the several officers mentioned by him were thanked for the interest taken

taken by them in the enquiry. and a copy of Mr. Oldham's report was at the same time forwarded to the Secretary of State for India.

Major Applegath in his letter of the 24th Feby 1868 — brought to the notice of Govt. that no pits were sunk, or blasting to any sufficient extent carried out as Mr. Oldham thought nothing more necessary than a cursory inspection. He also brought to notice that near the village of Vadadey a burnt out crop of shale (coal?) was shewn to Mr. Oldham who then stated his opinion that it was burnt "shale" which had been ignited by the red hot iron ore, but that no mention was made of this burnt out-crop by Mr. Oldham in his report. In conclusion he remarked, that he adheres

Go. March 7th 1868 No. 606
Rev. Dept.

Go. 907 of 6th April 68 R.D.

to his assertion that he had actually quarried and burnt coal in large quantities on the spot; that he himself conducted & saw the operations and can further appeal to the evidence of the Rajah of Mookteala and his son, and of a Gt. Lascar, Mahomed Khan, Engineers' Dept., Bezwara, who were present at that time. All these he considered sufficient to dispose of the insinuation that the coal was placed there for private purposes. With these remarks he left it to the Govt. to decide what further steps should be taken, but the letter was ordered to be recorded.

The Govt. sanctioned the charges included in the bills submitted by Major Applegath on account of the loss of one month's command allowance and contingent

expenses incurred by him.

Mr. Oldham's reply to several letters & articles which appeared in the newspapers regarding the alleged discovery of Coal on the Kistna River, in which he denied having found anything like "burnt coal" or "burnt shale" either in a large or small bed, or even a trace of any such rocks visible any where in the field, was ordered to be laid on the Editors' table.

G.O. 1125 of 27th April 68. RD

The Govt. sanctioned a sum of Rs 40-3-11 on account of expenses incurred in the search for coal near Jaggiah petta.

G.O. 2164 of 14th Augt 68 R.D.

In July 1869 Col: Applegath brought to notice the fact of large & valuable beds of coal having been made public in the "Friend of India" at Chanda on the Wurdah, and made a further representation regarding coal in the Kistna Dt.; and suggested that a small working party of Sappers may be sent to the Kistna to open out the burnt-out crops and other rocks at places in the Govt. territory close adjoining the Nizam's dominions; but the Govt. was unable to view favorably the proposal that expenditure should be incurred for the purpose of making further search for coal in the Kistna Dt. under non-professional direction.

G.O. 2509 of 4th Sept. 69 R.D.

In July 1870 Col: Applegath again requested permission to proceed to the Kistna Dt. with a small detachment of Sappers & Miners properly equipped with blasting tools &c. for the purpose of exploring the Coal fields in the Dt. Dt.; and the Govt. approved of his proposals and requested

G.O. 1024 of 15th Augt 1870 Public.

His Excellency the Commander-in-Chief to authorise Col. Applegath proceeding on duty to Juggiahpetta with a section of Sappers & Miners from Hyderabad.

The Board of Revenue in December of the same year submitted for the information of Govt. a letter from the Supt. School of Industrial Arts, to Lt. Col. Applegath forwarding drawings of Bengal coal plants, and remarking that the samples which Col. Applegath forwarded from the borings at Juggiapett are of a favorable kind, and that the strata and fossils are very like those from the Rajmahal, Chanda, and Dumagoodum coal fields. and the Supt. School of Industrial Arts himself addressed the Chief Secy. regarding the more favorable character of the borings

G.O. 84 of 20th Jany 1871. Public.

G.O. 15th March 1871 Nos. 336 337 Public

carried to greater depths, and suggested that Col. Applegath and the Sappers employed in borings under his directions may be kept for a longer period at the work, and if possible afterwards sent to bore under the sandstones and shales at Palwad and Datchapilly further up the Kistna.

These papers were recorded by the Govt.

In Feby. 1871 Col. Applegath submitted his final report on his search for coal in the village of Juggiapetta, together with specimens of the rocks, shales, and ores collected by him. A complete set of the specimens were forwarded to the Govt. of India for submission to the Geological Dept. for the

expression of their opinion as to the probability of coal being found extensively in the place indicated by Col: Applegath, and as to its being desirable that that officer should resume the work of boring for coal as soon as the season will permit of his doing so, or that this duty should be undertaken by the Geological Dept.

In April/71 Mr. Boswell the offg. Collr. of Kistna Dt. reported that one Kodavenda Kenkiah of Dantalepolli again appeared at Masulipatam with some specimens of what he considered genuine coal, and a piece was forwarded by baughy. The locality he indicated as in the Nizam's territories about 112 miles from Jaggiapetta, and the Govt. were asked if the offered reward of Rs 1000

Singareni field?

1871 No.
Go. 9th May 810 Rev: D.

to any one who may show a good workable seam of coal was limited to coal within British territories. This specimen was forwarded to Col: Applegath at Vizianagaram for his opinion - and the Collr. was requested to communicate the facts to the Resident at Hyderabad if it is pronounced "genuine coal." With regard to the reward the Collr. was informed by telegram that if the Coal is in the Nizam's territory the Resident of Hyderabad should be addressed.

Mr. Oldham in reporting on the specimens forwarded by Col. Applegath after explaining the nature of the various kinds of rock, remarked "I regret to say "that there is not even the "slightest indication of any

"evidence tending to show
"the probability of coal being
"found in the places indica-
"ted by Col: Applegath - The
"rocks of which specimens
"have been sent, are all,
"without exception, of varieties
"which belong to series of
"geological date, long prior
"to that which in India
"is known to contain coal.
"They are all identically the
"same general character as
"others, which cover a very
"large area to the south of
"Juggapettah, over which
"area the rocks are both
"highly contorted and well
"exposed, and where, therefore,
"any deposits of coal, which
"might be supposed to exist,
"could scarcely fail to be
"brought to light. The area
"of this area has been examined
"carefully, and no such in-
"dications of coal have been
"anywhere found; and I
"am, therefore, unwillingly
"obliged to declare my
"fullest conviction that
"there is not the slightest
"hope of finding coal in any
"one of the places referred
"to by Col: Applegath."
At the same time Mr.
Oldham reported that
although no coal had
actually been seen, still the
rocks which overlie and
accompany coal more to
the North (Chanda &c)
extend irregularly down
the valley of the Godavery
covering a considerable
area in His Highness the
Nizam's dominions, and
extending also into the
Madras Presidency where
they come so far South as
within about seven or eight
miles of Ellore and across
from that to the Godavari.
(see Kings map Plate XVI, 3.

Beddadanol field?

the rocks (Kamthis) covering the
coal measures in all the Godavari

This report which was received thro' the Govt. of India was communicated to Col: Applegath and Dr. Hunter.

Mr. Oldham in June 1871 again brought to the notice of Govt. the probability of coal being found in the Godavery Dt. and urged upon the consideration of the Govt. a more careful geological examination to be made in more detail, before attempting any practical explorations. This report was communicated to the Collrs. of the Godavery & Kistna Dts., to Dr. Hunter & Col: Applegath; and Mr. Oldham was requested to keep the Govt. informed of all results that may be obtained on the examination of the tract of country indicated in the report.

Go. 16th June/71 No. 855 Public

Go. 5th July/71 No. 971 Public

In acknowledging receipt of Professor Oldham's Memorandum on the report of the specimens recently submitted to him, Col: Applegath pointed out, that Mr. Oldham had been studiously silent on all the most important rocks collected and sent him, especially the whole of the specimens marked B, which are absolutely identical with the Bengal lower coal series, i.e, rocks found immediately below coal in India; and that on Professor Oldham's own admission coal-bearing rocks do exist in the Kistna Dt., for "the Chanda coal-bearing "rocks do come into the Madras "Presidency and reach within "seven or eight miles of Ellore", which is still further to the South than Juggiapetta. and he reported that a real genuine coal was brought to him from the Nizam's country in February, discovered within about forty miles of Juggiapetta in the Nizam's Dominions, and concluded

with the remark that a sufficient supply of workable coal would soon be obtainable from near the place long pointed out by him, and that he was content to wait and let facts speak for the correctness of the assertions so constantly advanced, as to the existence of coal in the Kistna Dt.

This letter was recorded by the Govt.

Again in Septr 1873 Col. Applegath forwarded a map drawn on tracing paper of the Juggiahpetta Dt. with a description docketed & marked A, suggestions for making borings for coal docketed & marked B, and a note on the Kistna Dt. Diamond Strata docketed & marked C. Copies of these papers and of the accompanying map were forwarded to the Supt. of the Geological Survey, to the P. W. Dept. and to the Collr.

G.O. 1194 of 7th Augt 1871 Public D.

G.O. 1020 of 30th Septr 1873 Public

G.O. 3026/3027 of 16th Decr 1873 P.W. Dept.

of the Godavery & Kistna Dts. Twelve copies were furnished to Col. Applegath with the best thanks of Govt. for the valuable information they afforded and copies were also sent to the Resident at Hyderabad, the Board of Rev. and the Supt. of Govt. Museum.

In December 1873 application was made to the Govt. of India for the services of an experienced officer such as Mr. Vanstavern for special employment in thoroughly exploring the Beddadanole Coal field brought to notice by Mr. King, as well as the coal field reported by Col. Applegath as certainly existing on the banks of the Kistna & in the Kistna Dt.

Col. Fischer R.E. the Dt. Engr of Godavery, in

Feby 1874, reported that Mr. Vanstavern had informed him that he was marching direct to Beddadavole from Doomagooden, and the Govt. expressed their satisfaction that the services of Mr. Vanstavern had been placed at their disposal for exploring the coal fields supposed to exist at Beddadavole in the Godavery, and at Jeggiahpetta in the Kistna Dt., and the Dt. Engrs of Godavery & Kistna were informed that Mr. Vanstavern will be considered to be working in communication with them."

Go. 615 a/ 9th March 1874 Mines.

The Govt. of India in March 1874 forwarded for information copy of a few remarks submitted by Mr. R.B. Foote, Dy Supt. of the Geological Survey of India on the notes drawn up by Col: Applegath on the subject of the discovery of coal and diamond strata and other valuable rocks and ores in the Kistna Dt., which was ordered to be recorded.

Go. 1070 a/ 27th April March 1874 P.W.D.

With a view to put an end to any doubt as to the existence of coal-bearing rocks in the Palnad, Kistna Dt., the Govt. of India suggested that Mr. Vanstavern may be deputed to make a few borings in places to be indicated by the Offg. Supt. Geological Survey of India, to whom they had been pointed out by Colonel Applegath; and the Dt. Engr. of Godavery was accordingly directed to take the necessary steps for Mr. Vanstavern's examination of the coal field reported to exist on the banks of the Kistna after the explorations at Beddadavole have been completed.

Go. 137 a/ 17th July 1874 P.W.D.

In a telegram of the 22nd June 1874 Mr Vanstavern was ordered to remain under the Madras Govt, and the District Engineer of Kistna was informed that the borings in Col: Applegath's supposed coal-field in Palnad, Kistna Dt, might be taken up if the season permits.

Col: Applegath's letter offering remarks on Mr Foote's notes against the probability of coal being found near Juggiahpetta in the Kistna Dt, was communicated to the Dist: Engineers of Godavari and Kistna with a request that Mr Vanstavern will be guided by Col: Applegath's suggestions in the paper marked B, recorded with Public Dept: order No: 1020 of the 30th Sept: 1873, and that the first boring be made in the neighbourhood

G.O. 1870 C a/11th July/74 P.W.D.

G.O. 20th Augt/74 No 166 A. P.W.D.

of 2 Wells marked Q.Q, pits being dug at the same time in other places such as S+H, where Col: Applegath's specimens were obtained.

Major Beatty R.E, D.C. Engr Godavari, in forwarding Mr Vanstavern's report on the subject of the examination of Col: Applegath's coal field in the Kistna Dt near Juggiahpett in which he proposed to carry on borings, both at Beddadanole and near Juggiahpett, suggested the appointment of Mr C. Moore as Mr Vanstavern's assistant to superintend operations at Beddadanole during the absence of the latter in the Kistna Dt:- The Govt approved of Mr Moore's appointment and directed the immediate commencement of work in the Kistna Dt

G.O. 2346 A a/20th Augt/74. P.W.D.

with the assistance of Mr. More, who was to be left in charge when Mr. Vanstavern returned to Beddadanda.

Mr. Vanstavern's arrival at Bezwarala on the 18th. Septr. was reported by the Supg. Engr. in his letter of the 24th. Septr. /74 in which he also intimated the programme of work to be undertaken by Mr. Vanstavern, and requested sanction to an estimate of the probable cost of boring operations during three months. This letter was recorded, and the Controller of P.W. Accts. authorised to pass the expenditure incurred in the Kistna Dt., pending the grant of a special assignment of funds by the Govt. of India.

The Supg Engineer's report of Mr. Vanstavern's arrival at Jaggiapetta on the 25th. Septr. was ordered to be recorded.

G.O. 3045 a/ 26th. Octr. /74. P.W.D.

G.O. 20th. Octr. /74 No. 2987. P.W.D.

G.O. 3397 a/ 3 Decr. /74 P.W.D.

The travelling expences of an Hospital Assistant apponted to do duty with the coal exploring party in the Kistna Dt. were sanctioned, and the Supg. Engr. was asked to report the amount that should be added to the estimate previously submitted on account of pay and allowances of the Hospital Asstt.

Mr. Vanstavern's journal of work done from the 25th. Septr. to the 19th. Octr. /74 was recorded, and the Supg Engr. requested to instruct Mr. Vanstavern to continue his borings at A till it is beyond doubt that coal is not to be met with at that locality, at any such depth as anticipated by Col. Applegath, and that afterwards a boring at Q should be made to the same extent, and finally

G.O. 3454 B a/ 8th. Decr. /74 P.W.D.

the pit at S deepened, as suggested by Col: Applegath. At the same time Mr. Vanstavern was directed to continue his thorough exploration of the whole country shown on Col: Applegath's map.

Mr Vanstavern's journal from 21st Octr to 4th Novr submitted with Major Hasted's letter of the 5th Novr 1874 was recorded with reference to GO. 3454 B of 8th Decr 1874, and his journals from the 5th Novr to 20th Decr 1874 were also ordered to be recorded.

GO. 3576 of 19th Decr 1874 PWD.

In his letter of the 13th Jany 1875 Major Hasted reported the results of two borings made by Mr Vanstavern near the southern well at Q (on Col: Applegath's map), in the neighbourhood of Vadadry; and having considered indisputable that it has been that there was no coal at Q, Mr Vanstavern had moved his tools to the pit marked S; and the Supg Engr at the same time intimated that he would direct Mr Vanstavern to return at once to the Godavery should nothing be found at S.

GO. 178 of 21st Jany 1875 PWD.

The Supg Engrs intentions were approved.

GO. 333 of 5th Feby 1875 PWD.

The Supg Engr in his letters of the 15th & 25th Jany 1875 reported the results of borings near pit S in the neighbourhood of Vadadry, and forwarded Mr Vanstavern's journal from 20th Decr 1874 to 20th Jany 1875 with the remark that having found nothing like coal he had directed Mr Vanstavern's return to the Godavery for employment on coal operations at Beddadum. He also promised a sketch of the geological features of the ground shown on Col: Applegath's map, which had been prepared by Mr Vanstavern together with a short general report on the operations, and

specimens from the different borings; these letters were recorded pending receipt of the Sketch and report.

G.O. 383 a/ 12th Feb/75 P.W.D.

With his letter No. 144 of the 29th Jany 1875 Major Hasted forwarded a copy of Col: Applegath's map with the geological features of the country marked on it by Mr Vanstavern, also a short report by that officer on the result of his operations, and a statement showing the strata passed through by each of the borings that had been made - and he reported the departure of Mr Vanstavern on the 22nd. The Govt ordered that a letter be sent to the Govt of India submitting copies of Mr Vanstavern's map with copies of all reports on the subject - they also expressed their satisfaction as to the completeness of the investigation

G.O. 761 a/ 8th March/75 P.W.D.

carried out by Mr Vanstavern and the interest taken by Major Hasted in the matter. The Supg Engr was also requested to hold the specimens from the borings at Mr Kings disposal.

Letter No. 762 a/ 18th March/75 P.W.D.

The Govt of India were accordingly furnished with copies of the map and reports illustrative of the explorations for coal in the Kutch Dt.

30/1/82

Ed. 2016.

Enclosure No 4

Record of the Kistnah Coal discovered by Colonel Applegath in 1851.

1. In 1849 Sir Arthur Cotton, R.E., K.C.S.I., appointed me as Assistant Civil Engineer in sole charge of the Kistnah District, which contains about 3,000 square miles of country, adjoining the Nizam's dominions, and having been directed to build a Lighthouse at Point Devy, I was fortunate enough to find a suitable limestone, and I built the Lighthouse, and it is there now.

2. While examining the strata of limestone, I commenced a horizontal shaft into a red shale hillock, and bored seventeen feet horizontally into this hill of shale, and a black substance like the Torbane Hill mineral was found; this substance ignited, and became a red hot fire. We quarried several tons of it to make sure our prize was a genuine one. I also induced the native blacksmiths to utilize it, which they did. I immediately reported the discovery to the Madras Government, and forwarded specimens of the coal to Madras.

3. This is the correct account of the original discovery of the Kistnah Coal, which Professor Ball, at page 644, styles Pseudo Coal sent from the Kistnah. In the autumn of 1851 I came home to England, and in 1852 I reported my discovery to the Court of Directors.

4. However, not till 1868 did the Geological Survey move in the matter, when the Superintendent of the Survey then inspected the locality, having previously ignored the possibility of coal occurring there, he reported unfavourably of the district, and conveyed his opinions in a style altogether unusual in the official correspondence of India, of which I was obliged to take official notice.

5. Mr. R. B. Foote, of the Geological Survey in 1872 made and published seven sections of the Kistnah District rocks; but not one of the seven commences from, passes through, or terminates at Juggiapettah Town, where the Lower Coal rocks (Talcheers) are extensively and plainly developed; and in 1874 the newspapers of Madras published an account of Mr. Foote's opinion, that the Kistnah District rocks resembled the Coal rocks at Singareney.

6. Professor Ball next alludes, at page 70 in his "Economic Geology," to borings which, he says, were made at points indicated by Colonel Applegath

Coal in the Kistna

with his own hand, on his own map. But he is mistaken. The following are the facts:—Eleven borings were made, ten of these borings averaged only 27 feet deep, and one boring was 110 feet deep. At one spot I had pointed out three borings were made; one boring was 7 feet deep, one was 8, another was 23 feet deep. At another spot where I had recommended a horizontal shaft a vertical one was made.

7. At the third spot at which I had recommended a boring, number 6 of the Report, was 110 feet deep, and here 57 feet of hard and soft black shale was cut through. This black substance has been called a variety of names, such as Pseudo Graphite, Coal Smut, Burnt Shale, &c., &c. I believe this black stuff is coal that has been partially burnt, as it has the appearance of coke, and under a magnifying glass it presents every appearance of coke, or burnt coal, and, when ignited, burns like a coke fire. It may even be a natural bed of coke.

8. There were seven other localities which I had particularly recommended to be looked at by the Survey Department, but none of these appear to have been reported on or examined. And as for these borings for coal, of 7, and 8, and 23 feet deep which they did make, such would not satisfy any ordinary coal viewer.

9. The members of the Geological Survey state as their opinion, that the rocks of the Kistnah District are Cuddapah rocks—"Formations long anterior to the coal rocks of India, and their lithological and metamorphosed characters were wholly inconsistent with the idea of coal occurring with them;" and Professor Ball says, "that there was, moreover, no more reason for coal occurring there than in any other part of the districts where the same rocks are found." Even this dictum is opposed to the fact which he notices when the Singareney coal and its rocks are brought under review, as here the coal and its rocks sometimes rest on Talcheers, and elsewhere on the old Cuddapah rocks, or on Gneiss (See "Manual of Geology for India," part 1, page 241) I may mention that the Singareney Coalfield was discovered by Mr. King, F.G.S., but the territory belongs to H.H. the Nizam of Hydrabad. There are several seams in it, and one 34 feet thick of solid coal. This coalfield is situated on an important affluent of the Kistnah River, and is only 33 miles north of the British boundary of the Kistnah District.

10. I may also mention that the Kamarum Coalfield (situated a little to the north of the Singareney Coalfield) is surrounded by Cuddapah rocks, and on the south-west the coal rests on these Cuddapah rocks. However, Professor Ball has stated the coal is fair, and that there are 1,132,560 tons of available coal.

11. It is important to record coal-bearing rocks (see "Manual of Geology," part 1, page 240) extending for six miles at the hill of Kunnigherry, which is situated within 15 miles of the Kistnah District.

12. I am able to advance one more most important proof of coal found associated with the Cuddapah rocks, alluding to the Godavery and Wurdha rivers (see "Manual of Geology," part 1, pages 228, 229, 230), where the coal is fair and plentiful. Professor Ball, in his "Economic Geology," page 93, estimates the available coal here at 1,714,000,000 tons. And as a caution to the too hasty condemning of the Kistnah District, I must mention that the late Superintendent of the Geological Survey in India published a memorandum under Mineral Statistics, dated Calcutta, 1st June, 1861, that there was no true coal on any of those rivers. I believe this memorandum is now out of print, but it was originally published in Vol. 3, page 215, Geol. Survey Records.

13. There is still one more subject of importance connected with the eastern part of the Kistnah District; I allude to the coal found at Beddanadole, which rests on Metamorphic rocks. My authority for this statement is the "Manual of Geology for India," part 1., page 239. The engineer who made these borings is of opinion that there is more coal to the south-west, that is nearer the Kistnah District (this part is still reported under progress, Vol. 16, part 3, page 11); but the Geological Survey have now reported, and drawn on their maps, several hundred square miles of country containing Indian coal rocks, and have marked coal strata within eight miles of the navigable canal to Madras. All these are promising indications of coal to be obtained from this eastern portion of the Kistnah District; but I would point out that in the map that accompanies Vol. 16, part 3, the colouring artist has been a little too lavish with his pink colour, and has painted as Gneiss what is in reality Hydraulic Limestone and a Diamond Conglomerate (plum-pudding stone), both these rocks occurring close to the village of Kistnaveram, which is covered over or hidden by this pink colour.

14. The published official documents of the Indian Geological Survey, up to 1881, notify that coal has been found in exactly similar rocks to those of the Kistnah District, where, 30 years ago, that is in 1851, I discovered coal as I have just related. This will dispose of Professor Ball's suggestion at page 71 that the Beddanadole coal of 1874 was the first genuine coal discovered in the Madras Presidency, and I am anxious to appeal to the President (Sir Joseph Fayrer) and to this meeting, as to whether I have not had good grounds for so constantly urging the Madras Government to have this long disputed coal locality more fully and more thoroughly explored.

FRANCIS APPLEGATH,
MAJOR-GENERAL,
Madras Retired List.

31st March, 1882.

Specs

Coal in the Kistna

Colonel R. F. Sankey R.E.
Secretary to Government P.W.D. P1
Madras

Sir,

I shall esteem it a favor if you will be kind enough to convey my thanks to His Excellency The Governor for allowing the most recent despatches about the prospects of Coal for Madras to be sent to me in England, I think I am warranted in believing that His Excellency has some belief in the truth, and integrity of my own efforts to verify and even the Coal now lying dormant in the Kistnah District.

2.

The Geological Survey in 1868 reported unfavorably on the Kistnah District for Coal measure rocks, and coal; But on 7th June 1871. The Superintendent wrote to the Madras Government to withhold their unfavorable opinion of no Coal for the Madras Presidency "As important discoveries were being made of our an area Unknown Geologically" and ever since that time (June 1871) discoveries or rather verification of Coal bearing strata have continued to be made till 1881. When Vol 18. Part 3, with Map. A Coal field of about (4 000) four thousand square miles with about 4 00 square miles of the most Southern part

of this great Coal Field, actually situated in the Kistnah (District proper, or at least in territory that belongs to the Madras Government; still the latest Geological Survey published records holds out no substantial grounds for either good or thick Coal in this locality.

3 The Indian Coal measure strata shewn in maps to Parts 1 and 3 of Vol 16, is now brought down to South Latitude 16° 53' in the Eastern part of the Kistnah district and the Goondwana series of rocks also (Coal measure rocks) on which the South Rewah seam of Coal 17 feet thick at Umeria was telegraphed to England in the Times 10th April last, has been traced for more than 100 miles to the South of the above named latitude, in this same Kistnah District.

4. The only borings for Coal actually made in the Kistnah district are described in Proceedings of Madras Government 18th March 1875 a short resume of them is noted in Paras 6, 7 and 8 of the accompanying memorandum about Coal which I read before the Society of Arts on 21st April 1882. If a reference is made to my letter 30 Sept 1873 wherein I had taken the liberty to make suggestions for Coal borings, it will be seen that several horizontal borings were ~~[illegible]~~ recommended for reasons given, and that vertical borings were particularly suggested for like reasons, and certain other rocks should have been carped and that the fire crushed or burnt outcrops of Coal should have been examined, these are all marked on my map. In the Sherriah Coal Field, Bengal 13 seams of Coal were found burnt, and in Raneegunj a thick seam of Coal was burnt to such an extent, as to cause a subsidence in the ground of 200 square yards, this subject has attracted considerable notice, in Bengal, though passed over in silence when Madras was interested in its investigation.

5. In the Proceedings of Government dated 7 Sept 1881, sent me, allusion is made to Memoirs Geological Survey, Vol 18, Part 3. where at Page 92, marginally noted. The "Yielding of the Coal question for the Madras Presidency." "It has only been within the last few years that the Government or the Public has been reconciled to the fact that the only Coal in the Madras Presidency is that contained in the few patches and outliers of Barakar Sandstones, situated in the Godavery District and the adjacent country of the Nizam."

6. The above conclusion or report is so diametrically opposed to my belief and experience, that I feel bound to write a strong remonstrance against it. It has been written by a Member of the Geological Survey a Mr W. King, A.B. F.G.S.

Deputy Superintendent, Madras, who has visited the Juggiapettah district, and when he was there, acknowledged in the following words his inability to solve the Geological problem, he had set himself to work out. See Vol 8. Part 4. Page 259

(((. It will be shewn presently how these peculiar instances of superposition and resemblance render the Palnad, (Juggiapettah District included) or extreme north Eastern Field of the Kuddapah and Kurnool rocks a perfect puzzle in the attempt to correlate its strata of which Mr. Foote and I are only able to advance very doubtful solutions.))) I would here take the liberty to enquire why if Mr. King was in such doubt about the Geological formations of this district; he should invariably have expressed such confident opinions against the existence of Coal.

7th The Coal measure rocks of the Juggiahpettah district about 44 in number which from time to time I have discovered, reported on, and sent specimens to Madras, though extending over only 50 square miles will, when properly examined shew most clearly their importance by producing Coal, with water carriage to Madras, and I believe will eventually develope themselves into a Coal Field of great extent, see Map to Vol 8, which

will be the largest Coal field in India and with a probable extension to within 30 miles of Madras. I mention this as a very probable outcome of the thorough examination of the Juggiapettah District which is only the extreme north east corner of the map to Vol 8, and in Part 1, Page 60 of the Manual of Indian Geology, this extensive crescent shaped County surrounded by Gneiss rocks is estimated to contain 13.500, square miles

I have the honor

to be Sir

Your most obedient Servant

Francis Applegath

Major General

Madras Retired List

19th May 1882

24 Blomfield Street

London

W.

No. 230.

FROM

THE SUPERINTENDENT,
Geological Survey of India,

TO

Colonel Sankey, C. R., R. E.,
Chief Engineer, P. W. D.
Madras.

Dated Calcutta, July 4th 1882.

SIR,

I have the honor to acknowledge receipt of your letter No. 230 E., dated 13th June 1882 forwarding for remark a letter, dated the 19th May from Major General F. Applegath on the subject of his alleged discoveries of coal in the Kistna district. I had already noticed in the newspapers, English and Indian, the revival of the Kistna coal question, and I am glad of this opportunity of submitting some remarks thereon for the consideration of His Excellency the Governor.

2. General Applegath must believe that the patience of the Madras Government is inexhaustible. And well he may; for surely, since the dawn of science, no claimant to discovery has anywhere met with so much indulgence as he has from his Indian masters. Time after time has he found favor and encouragement, after repeated demonstration by most competent authority that his assertions and promises were baseless, and

after repeated failures on his part, with liberal aid of public money, skilled labour and appliances, to verify his assertions. It is no wonder that he should now again come forward in bolder form than ever. I must confess that, to the qualified and responsible ministers and advisers of Government in these matters, any further countenance to such pretensions would be 'heart breaking'.

3. I will presently give an abstract and analysis of this remarkable case, it is desirable first to clear the question of irrelevant matter and to fix attention upon what has been the mainstay of so much discussion. It is not to be believed that the Government or the public would for a moment place the judgment of one so completely uninstructed in such matters as General Applegath, that the rocks of the Palnad belonged in whole or in part to the already established coal-formation of the peninsula, in competition with that of the Geological Survey, that they were all of Transition or Lower Vindhyan age, the two being as widely separated stratigraphically as are the Colitic and the Silurian series of Europe. The "fossils" sent by the General in support of his contention were not fossils at all; and his rock specimens scarcely bore any resemblance to the standards to which he referred them. The occurrence of coal in those older rocks would of course be an

independant question; and although a very extensive survey of them in that very field and in other parts of India had revealed no trace of a coal-measure group, there would still remain the possibility of a local deposit. The question is thus brought within very definite limits of fact, and it would never have taken shape but for General Applegath's assertion that at a particular spot within 20 feet of the surface he had once upon a time quarried coal and burned it.

4. To any one whose ideas on the subject were not altogether in the air nothing could be simpler than a complete verification of such a statement. It is practically impossible that several tons of coal could be extracted, and leave no trace to tell the tale; yet with every appliance of tools and skilled labor, funds and time, General Applegath has never again been able to produce an ounce of any substance that would support combustion. He has, however, never ceased to reiterate his assertion; and his confidence has imposed upon others no better informed than himself; the strong wish for the realization of his assurance being on both sides the efficient motive of assent. It is a striking instance and an instructive caution, upon the persuasive influence of unflinching testimony in a credible witness, for no one, that I know of, has ever cast a

suspicion upon General Applegath's truthfulness.

5. In its successive orders giving sanction and encouragement to General Applegath's explorations, ignoring its own previous adverse decisions upon the case, Government did not, of course, give reasons for so doing, but we may safely take these to be the same as those that guide public opinion in the matter. In a Calcutta daily paper of the 28th March last, apropos of General Applegath's recent manifesto, it is said — "This case of coal in the Kistna district is probably another instance in which practical men have been ahead of the geological theorists." Nothing but the diffusion of knowledge can remove the popular prejudice that is revealed in this sentence, but as it contains the only approach to direct argument that I have seen, it is of practical importance to point out that the instance referred to as parallel is of a wholly different nature. It refers to the discovery of the coal measures in the north of England by deep sinking through newer overlying formations. The writer of the article implies that the geologists were false prophets on that occasion; and no doubt the pit sinkers were practical men; but in the Indian case the facts are all above board, the rocks at the surface in the Palnád are immensely older than any known coal-measures, and the only evidence to warrant any outlay on exploration is General Applegath's assertion that he once quarried coal there within a few feet of the surface. Surely a practical man would require the General to make good his assertion, before starting on what would otherwise be a wild goose chase.

6. The acts and arguments referred to imply more or less of credence in General Applegath's frequent animadversions upon what he takes to be the carelessness, the contradictions and the obstructiveness of the Geological Survey. I do not care to exhibit the ridiculous misunderstandings upon which such remarks have been based. Too much time has already been wasted over this tiresome business, and I have shown that the whole question turns upon a simple matter of fact. The supposition that a body of professional men could be so infatuated as to pooh pooh a project founded on so circumstantial a basis, which if true must inevitably be presently substantiated, is only further evidence of the hazy view taken of the conditions. Until this ground had been visited the Survey gave every encouragement to the investigation. It has been said that Dr. Oldham's visit to the Palnád in company with General Applegath and others was made in a perfunctory manner. But this again is unfair. Dr. Oldham went to see all that General Applegath had to show regarding the existence of coal; and finding no vestige of real evidence, it would have been foolish of him to sit by while a

boring was made in slate on the chance of unearthing a coal seam. Dr. Oldham officially and publicly (Madras Gy. O. 1125 of 27th April 1868) denied the statement that anything like "burnt shale" or "burnt outcrops" or "a substance rich enough to support combustion" had been seen. Since then and before it General Applegath has had ample means and leisure given him to make good the statement that he had once burnt coal extracted from the site in question, but all his endeavours have been in vain.

7. As it is not a ghost story, some intelligible explanation of the mystery must be forthcoming. The most likely one was suggested by Dr. Oldham, that to please their master, the natives had put some real coal in the hole and produced it for his satisfaction. A hoax of this kind was shortly after successfully practised upon Dr. Oldham himself, and all the officials concerned in the famous case of the Midnapur borings. In the Kistna case, however, there was hardly room for this without culpable blindness on the part of the victim, for the excavation is said to have been a shallow drift, and accordingly General Applegath repudiated the "insinuation", averring that he had himself conducted and seen the operations, and repeating his statement in the following emphatic and expanded form— "I adhere to my assertion that I have actually quarried

and burnt coal in large quantities on the spot, as much as eight or ten tons." (Madras Gy. O. 606 of 7th March 1868). There thus remains a cut and dry choice between a physical anomaly (amounting to impossibility) and a case of mental delusion, such as is unhappily of too common occurrence in history. In going through the documents for the present, I hope final disposal of the case, I have been greatly struck by the fact that General Applegath's assurance becomes clearer and stronger and larger as the event recedes in time.

8. The oldest papers I have on the subject are a manuscript map and two sections with a brief list, all signed "T. Applegath Lt. Asst. Civil Engineer" and dated "Camp, Moogetalah, 18th December 1850." The map is entitled "Plan of the Marble fields near Jaggiapetta on the Kistna and Pallair rivers," and with the sections it is colored geologically (after a fashion). There are five pits marked on the plan, and the annexed list is headed "Description of the pits etc. that have been sunk in searching for coal." One of these pits is at the very place assigned for the coal discovery, on the left bank of the Pallair about half a mile above its confluence with the Kistna. This pit is figured on one of the sections to the full depth ever said to have been attained there, and the only legend is— "shaft 20 feet through slate with a soft material

below, thickness unknown". In the list the same is described as- "Pit No 3. Shaft sunk 20 feet through slate, small but distinct traces of vegetable deposit at the lowest excavation, and a soft white deposit at the bottom of the shaft, thickness unknown". In these original documents the word 'coal' only appears in the title of the list, as a desideratum; the rock in the pit being correctly noted as 'slate'. The date usually assigned by General Applegath for his discovery of coal is 1851, so it might be surmised that these notes are anterior, and not to the point; it seems not improbable however, that they represent the total result of his operations before going on leave when he reported his discovery to the Court of Directors, and, before leaving, to the Madras Government; for the map is endorsed "Lt. Applegath's supposed coal sites: from Walter Elliott, Madras C.S., August 1851." If this be the case there would be no escape from the judgment that the quarrying and burning of coal must take rank as a myth, so important a piece of evidence would certainly not have been left out in the contemporaneous account. No doubt many tons of the black slate were excavated, and nothing is more likely than that some pieces of it were put into a good camp fire, after which ordeal they would bear a tolerable resemblance to ash, and such may have been the small basis of fact which has grown so portentously. The samples of this stuff deposited at the Madras Museum would excusably have been thrown out as rubbish.

The next evidence tends to confirm this q
view. It consists again of a colored map and sections, with a report entitled "Captain F. Applegath's description of the geological strata on the north bank of the Kistna" dated Madras 28th of April 1861. In this apparently the same shaft is referred to (here marked as No 1) thus:- "an attempt was made some years ago to sink No 1 shaft for coal through the red shale in the southern parts of these fields, the red color appears to be superficial, for at a depth of 10 or 15 feet, the color changes from red to greenish grey, and blue and sometimes black. × × × × This occurred in 1851" There is no specific mention of the horizontal drift 17 feet deep from which in later accounts the coal is said to have been obtained; but I here find for the first time a notice of this circumstance, and only in a casual way as a bygone event and as secondary to what is considered more important observation, thus- "The limestones, shales, sandstones, and the fossils found, all tend to confirm and strengthen the belief that these rocks of the Kistna are of the age of the Indian coal bearing strata, moreover, the bituminous rock that I quarried and burnt, contained upwards of 30 per cent. of carbonaceous matter". The authority for this determination is not given, but it at least fixes a maximum value for the 'coal' of later

statements. At all events, in a concluding summary of the case this point is left out of count and the whole question stated as problematical — "All that has hitherto been done, has been at private expense, and thus for eleven years the suggestion of the probability or the reality of there being coal on the Kistna has been a source of anxiety of mind on one side, with incredulity on the other, and therefore it is a question still to be decided on its own merits; at least I think there is presumptive evidence of the fact of the existence of coal on the Kistna for in Bengal the arenaceous shale with fibre-like impressions of plants is coal bearing, also blue shale, and at Nagpore the greenish grey shale overlies bituminous shale and coal, the same in Bengal."

10. After this the enquiry took a more official form. In August 1866 Major Applegath submitted a memorial to Government soliciting aid for further exploration, again urging the identity of the rocks with the Indian coal measures, but the 'myth' now takes distinct shape, thus: "I here most distinctly state that on the occasion of one of my visits to the locality I have described on the Palair and Kistna rivers, I burnt in several large heaps the coal I had quarried, and that I even carried some and burnt it in the Sherehomedpettah Bungalow compound. I believe that not less than nine or ten tons were quarried and burnt, and that while burning it gave out great light and intense heat, and except that it was much heavier it was not unlike the Torbane hill mineral." Due mention is, however, made of failure to rediscover that combustible rock:— "Having once quarried and burnt the coal on the Kistna, I am not discouraged by my recent failure to reach the coal; and this dear-bought experience will prove invaluable in the next attempt. I am confident that coal exists there, its extent and thickness it is impossible at present to estimate." This application was referred to Dr. Oldham for opinion. Mr. Oldham deprecated boring until some fair evidence of the probability of coal being found should be established, remarking that "it would appear only reasonable to expect that Major Applegath should be able to show where he had quarried the coal, and the expenditure of very few Rupees, not one hundredth part of what borings would cost, would in a few hours prove the existence or non-existence of any bed of coal." He offers to arrange for a geologist to visit the ground in company with Major Applegath. This visit took place in January 1868, Mr. Oldham going himself. He was accompanied by Colonel Applegath, Mr. Stuart Assistant Collector of the district, and Mr. R. Oldham, who had been for some time engaged upon the examination of the same rocks further to the south

In the report of his observations Dr. Oldham remarked— "After this careful examination, I regret to report that, in my opinion there is no ground for any hopes whatever of coal being found within this area. The rocks are all of types well known, and covering a very large area of the Cuddapah and Kurnool Districts, and in no respect that I could see do they, in this part of the country, offer any feature which would induce one to suppose that there was a greater probability of coal being found here than at a thousand other localities within the very extensive area over which similar rocks extend to the south, and at some one of which it would, I think, certainly have become known did it exist." As no more of the so called 'coal' or combustible rock could be found, the suggestion is made that it may have originally been provided for the occasion. In General Order No. 590, dated 5th March 1868, the Government of Madras accepted this report as proving beyond all doubt the non-existence of coal in the valley of the Kistna.

11. At this juncture the episode of the Midnapur coal adventure occurred, raising sanguine hopes that coal might be found anywhere. In April 1870 a Memorandum was forwarded by the Madras Govt. urging further search in that Presidency, saying there seemed no reason why coal should not be found

beneath any of the vast tracts of laterite in southern India as well as at Midnapore. Dr. Oldham gave a reasonable answer (June 1870), explaining the different conditions - how all the measures of the Raniganj coal-field passed eastwards under the Alluvium of the Ganges delta and how impossible it was for any one to say how far they might or might not there spread out to north and south on the buried slopes of the gneissic upland: that there were no analogous circumstances in the lateritic regions of Madras, etc. etc. But all this was as moonshine to the promoters of such a scheme, and a profound distrust of geological insight remained; nor was faith restored when the fiasco of the coal at Midnapur was made known, for had not the geologists been taken in just as others.

12. General Applegath was not slow to take advantage of these favorable conditions. In July 1870 he applied for a grant of money and a detachment of Sappers and Miners equipped with boring and blasting tools for exploration in the Kistna District. The geological affinities of the rocks were not referred to, the one tempting assurance given being that he had once seen coal quarried and burned in large quantities in that district. Approval and sanction were at once accorded (Gt. O. 1021, 15th August 1870). When the two months allowed were nearly expired an extension of time and an additional grant were asked for.

on the following plea— "The sappers have to this date been employed in opening out the rocks; and as some of the pits are now twenty five and thirty feet deep, I am enabled to offer an opinion on the probability of finding coal in this district; and, after a very careful comparison of the Kistna rocks with all the other coal bearing districts in India, I am most decidedly of opinion that their representatives are found in this locality; I do not mean on the surface of the ground, but that they have been excavated by the sappers in the present investigation. I have, therefore, to express my firm belief in the existence of coal here, and the prospect of obtaining it, very shortly, from one or more of the pits now being made by the Sappers and Miners under my charge." The request was at once granted (G. O. 42. 11th January 1871). The total results of the explorations were submitted in a paper headed "Conclusions", dated 16th February 1871. There is no allusion even to the non-discovery of anything combustible or to the sanguine hopes so recently expressed regarding coal. There is nothing in the paper but a rambling discussion of a collection of the rocks, attempting to identify them with the Indian coal measures. Col. Applegath was thanked for his exertions, and the specimens were ordered to be sent to the Geological Department for opinion (G. O. 336, 15th March

1871). Dr. Oldham's memorandum (12th May 1871) on these specimens gave a complete demonstration that Col. Applegath had no rational idea of what he attempted to describe, and pointed out the utter waste of investigations so conducted.

13. In this interval the survey of the great basin of the Kadapah and Karnul rocks, of which the Palnád forms the northern extremity was completed, by Mr. King and Foote, as published in Vol. VIII, pt. 1. of the Memoirs (June 1872). There had been some discussion as to whether some beds in the Palnád should be placed in the Karnul or in the Kadapa series of transition rocks, but no possibility presented itself of any belonging to the Gondwana system, although of course the surveyors were fully informed of the coal controversy. This transition basin is the area which General Applegath now presents as likely to become the largest coal field in India. From there Mr. King went northwards and at once identified the coal measure rocks in the Singareni field, and found coal there.

14. Nothing daunted, and absolutely impervious to professional criticism General Applegath in September 1873 submitted to Government another map and description of the Juggiahpettah district with suggestions for further borings for coal, and a note on some diamond strata in the neighbourhood

It is simply a repetition of all the old fallacies and assertions, giving names to the imaginary fossils and impossible correlations to the rocks, with heroic composure as if nothing had ever been said to the contrary. The papers were ordered to be printed and circulated; 12 copies to be furnished to Colonel Applegath, with the best thanks of Government for the valuable information they afford (G. O. 1020, 30th September 1873). I happened at the time to be officiating for Dr Oldham and I was called upon by the Govt of India for any remarks I might have to offer. My answer may not have been forwarded to Madras. In March 1874 I submitted to Government a detailed note on this map by Mr. Foote, who had surveyed that ground; his remarks would satisfy any one having some knowledge of geology. In April 1874 I had the pleasure of an interview with Colonel Applegath on his way through Calcutta prior to leaving India. He informed me there was a proposal on foot for a renewed search for coal in the Palnad by the P. W. Dept; and as he expressed himself satisfied in every way with this arrangement I got him to mark on his own map the spots at which he most desired borings to be made. In the hope of putting an end to this tiresome craze, I forwarded these indications to Government recommending that the borings should be undertaken when Mr. Vanstavern could be spared from the borings

in the Bedanól coal field in the Godavari district. Mr. Vanstavern's account of his operations was submitted by the Superintending Engineer, Major Hasted R. E., in whose report the following remarks occur. "The instructions conveyed have been fully carried out, and even more borings than were directed have been made." "Mr. Vanstavern remarks that no coal bearing rocks nor outcrops of coal or any combustible matter was met with, and expresses his opinion that 'by the nature of the rocks there certainly cannot be any coal.' "It is with some regret that I am obliged to express my "entire concurrence in Mr. Vanstavern's views, but the "explorations have been so complete that I feel sure if "coal existed at all in this place, some signs of it must "have been discovered. The borings have been made "as close as possible to the pits dug by Colonel Apple- "gath and in every instance have been sunk con- "siderably below the bottoms of the pits; in addition "to this Mr. Vanstavern at my request, cleared out the "horizontal shaft in which it was understood Colonel "Applegath found something resembling coal which he "was able to burn, but nothing was met with except "shale". "I am puzzled to know what the substance "was which Colonel Applegath supposed to be coal, but "some of the stuff brought up from the borings which "is described as 'black clay shale with graphite' and "'dark brown clay' might, it appeared to me, be supposed

"to be taken from the immediate neighbourhood of coal.
"My own opinion is of little value, but I am anxious
"to state that I watched the operations with much inter-
"est and was rather predisposed to think Colonel Apple-
"gath's views were correct. I believe I may say that,
"up to a certain point, Mr. Vanstavern seemed to
"agree with me, but after several borings had been
"made and the country round explored, he inform-
"ed me that he had little or no hope of finding coal."
On this report His Excellency the Governor in Council
declared himself to be quite satisfied as to the completeness
of the investigation carried out for the exploration
of Colonel Applegath's supposed coal field on the
Kistna (Madras Gy. C. 761, 18th March 1875).

15. Not so, however, General Applegath;
as indeed might have been expected from the ob-
duracy he had formerly exhibited in the face of
previous ample refutations by himself and others.
In the letter under reply and the annexed statements * Returned home (
made before the Society of Arts as well as in the
newspapers, General Applegath protests against the
insufficiency of this examination and declares his
position as a discoverer of coal in Madras to be un-
shaken. His words imply that these trials were
made by the Survey Department, but that is an
error; no Survey officer went near them; they were
made by officers of the Public Works Department

who declare their initial persuasion to have been
favorable to his view. As already stated I do not
notice General Applegath's frequent and now recurring
misrepresentations of quotations from the reports of the
Survey, as they evidently proceed from his complete
ignorance of the subject; but it would be impossible
to make a like excuse for his misrepresentation of the
simple facts of these trials. In a letter to the Madras
Mail he says "I was in England at the time these
"borings were made, and so I could not have selected
"the sites". This is something more than a suggestio
falsi; the indication of sites for borings by marks
on the map of ground well known to the marker is
a completely recognised act of professional responsibility.
He objects that at one of his localities three borings were
made, only to depths of 7, 8 & 23 feet; but he omits to men-
tion that all three came upon metamorphic rock.
He objects that all the places he had recommended
were not explored: this would indeed have been a trial
of patience, and a culpable waste of time after the
principal places, those selected by himself, had proved
complete failures; one of these indeed should have
sufficed, the one where coal was said to have been
once extracted. Four borings were made at this
spot all deeper than any of the original pits; but
what is most important, the actual drift from which
the supposed coal was obtained was opened out and

explored, but no vestige of combustible matter was found. There is no remark offered upon this collapse. I have no doubt whatever that a jury of practical men would give an unanimous verdict of proven against General Applegath's coal in the Palnáds.

16. One very interesting observation in General Applegath's remarks to the Society of Arts remains to be noticed, as it throws much light upon the mystery that attaches to this romance of coal on the Kistna. I pointed out at the beginning that the General's cheval de bataille throughout the whole contention has been his assertion that once upon a time he had quarried and burned coal on the spot, where now it has been shown no coal exists. But for this unmistakable evidence he would never have been listened to, in fact he did not obtain a practical hearing until he mounted this charger in full panoply. In the original contemporary documents there is no mention of this discovery; in the unofficial report of 10 years later it is quoted as a combustible rock having 30 per cent of carbonaceous matter; but in the official memorial of 1866 it has become coal giving out great light and intense heat. This is the familiar process of genesis of the myth; and such I take General Applegath's coal to be. In paragraph 7 of the printed "Record of the Kistnah Coal" there is another very neat and instructive example of the same

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kind of performance; the old steed having broken down, a fresh one is trotted out from the depot of memory. Of the black clay from Bor. Vanstavern's boring № 6 it is remarked — "I believe that this black stuff is coal that has been partially burnt, as it has the appearance of coke, or burnt coal, and under a magnifying glass it presents every appearance of coke, or burnt coal; and, when ignited, <u>burns like a coke fire</u>. It may even be a natural bed of coke." I am not aware that any of this clay was sent to General Applegath, but that would not signify, it is assumed to be the same as some black stuff he had once thrown into a fire and beheld to become red hot. The General evidently walks by faith: in a letter to the <u>Overland Mail</u> to refute the conclusive evidence of Bor. Vanstavern's borings he remarks — "Quite on the contrary, the very important question of coal or no coal near Juggeapettah may (D. V.) I believe will, be definitely settled in the affirmative, if a little trouble can now be taken by the authorities in Madras". It would be sacrilegious to gainsay this final appeal to Providence, but I think the game is played out.

I have the honor to be

Sir,

Your most obedient Servant

H B Medlicott

Superintendent, Geological Survey of Ind

G.O. No 2343 W dy 20-8-74
" " " 761 W dy 18-3-75
" " 383 W dy 12-2-75
Rev. G.O. " 810 W dy 9-5-71.

Cri: 3/8.

The coal measures of the Kistnah are too deep for me but I am inclined to think after reading Mr. Medlicott's letter that "the game is played out."

H.B.S.

4.8.82

Cri: 3/8.

Hon'ble G. Sullivan
2nd Hon'ble the Governor

For orders

Some months ago at the request of the Hon'ble Mr Hudleston I sent some of the P.W.D. Gs connected with the Operations at the Small Bhadrachelam Coal field to Major General Applegarth &c. I believe he had written saying he was interested in the District

In reply that Officer has forwarded the accompanying letter dated 19th May and giving copy of a paper which it seems had been read by him before the Society of Arts in London

The latter paper alludes to discoveries of coal having been made by the Author some 32 years ago in the neighbourhood of Juggiapetta close to the banks of the Kistna

and gives a number of categorical statements which certainly at first sight promises to be of singular importance

The letter not only speaks of coal measure rocks which Jones had "discovered, "reported, on and sent "Specimens to Madras" but proceeds to express a belief "that these "would eventually develop "themselves into a Coal "field of great extent "x x which will be the "largest Coal field in "India and with a "probable extension to "within 30 miles of "Madras"

On looking at the old correspondence connected with this subject, a précis of which is herewith submitted, one thing at least was clear that the Surveyor has all along been fully persuaded of the valuable nature of his discoveries, and both in season and out of season brought these under notice

Undismayed by the cumulative evidence adduced by all scientific men who examined his maps and Specimens, [Messrs Sir) Walter Elliot Dr Pidelington (curator of the Calcutta Museum) and one after another of nearly the whole Geological Staff of India] which not only went to prove the hopelessness of looking for Coal in this tract of country, but to shew with equal clearness that the Surveyor, though freely using geological terms and expressions in describing his discoveries, had never apparently mastered the first rudiments of Geology as a Science

※ In this connection please see Mr Oldham's memo of 12 May 1871 printed with G.O. 16 June 1871 No 865 Public

he has maintained his stand during all these years — He has succeeded in moving successively the Court of Directors, the Secretary of State, the Madras Govmt the Geological and Public works Departments — He has maintained through the forces of this country and of England ("the Times" included) and now through the Home Society of Arts an agitation sufficient by its persistency to have established half a dozen new faiths

Yet it seems now sufficiently clear from the reports I am now submitting from the Superintendent of the Geological Survey of India (No 230 dated 4th July 1882) that these so called discoveries have no foundation whatever in fact, and exist merely as the dream of an enthusiast

Mr. Medlicotts visiting

of the origin and development of this myth I venture to think one of the most curious chapters of our Madras history which has been revealed which we can only say with Goethe

"Gegen die Dummheit
Kämpfen Götter Selbst
vergebens"

The myth having now reached the ripe age of 32 years it may be assumed as time has not arrived to put an end to it once for all

No one who has ever met General Applegarth would for a moment desire to unnecessarily wound his feelings, but as the present matter has now been continued as to, if it has not indeed passed all reasonable limits of endurance, I would venture to suggest

that Mr. Medlicott's
scathing exposure
be printed in full
with a brief order that
Government [illegible] absolutely
not listen to another
word on the subject —
and send copies to the
S of I and S of S — also
five spare copies to the
Geological Dept. and
place the GO on the
Editors table

Gos Rose

2/8/82

I submit also a small
index made kindly & gratuitously
by Mr. Medlicott

2096
2097

No. 2096 W. 18 Works.

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 18th August /82

Read the following :—

Letter from Major General F. Applegath, Madras Retired List . . . . . } (No. d/24 Blanfield Street, London. W. 19th May 1882)

Do — from H. B. Medlicot Esqre Superintendent, Geological Survey of India } (" No. 230 d/4th July — ")

On consideration of the letter from the Superintendent Geological Survey above recorded, the Right Honorable the Governor in Council is satisfied that it would be useless to further pursue the enquiry as to coal in the Kistna District - and will therefore not be prepared to reopen the question.

2 Copies of these papers

will be forwarded for the information of the Secretary of State and the Government of India. They will also be communicated to the Superintendent Geological Survey and placed at the disposal of the Supt.

(H.E. No. 2097 W dy 15 Augt /82)

Copy of the above forwarded to the Government of India
Dy as ut to
V 84 4 State copies
(H.E. No. 2098 W dy 15 Augt /82)

To,
The Most Honble
The Secretary of State for India

My Lord Marquis,

We have the honor to forward for your Lordships' information copies of

To,
The Superintendent,
Geological Survey. # 11
with 10 spare copies
" Se second note 3
Major Genl Applegath 3
with 2 spare copies.
Public Department 7
L.T. 8
Office 13
4 sent to W. dy 28/8/82
5
Collector 15
Sr. E. for Railways

Correspondence on the subject of coal in the Kistna District. The letter from the Superintendent Geological Survey has convinced us of the inexpediency of pursuing this enquiry any further and we have accordingly decided not to reopen the question

Copies
Despatches sent to Govt of India
2/9.

Draft
9/8/82

5 copies 1 despatch

R.S.

C 389
5094

C.A.U.

Council
box terminus

Attt

9/7/82

I do assume under
his signature
RSW/8

4c

5095 389
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a

1882 Madras.

PUBLIC WORKS.

Dated

17/8

Read.

Encl.

G. O. 15th August 1882, No. 2096 W.
2097 W
2098.

Nos.

Canal in the Krishna District.

Receiving note to reopen the question regarding the existence of —

Do Do

Forwg. Copy of Corrp deciding the —

Forwg. Co
decid
—