M.R.O. 14—13,000—27-9-24.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No. 1044	Press ~~Mis.~~
218:209	
Dated 17—6— ~~19~~1864	

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department, 17th June 1864.

No. 218. Read the following letter from C. O. OLDHAM, Esq., Deputy Superintendent Geological Survey of India, to J. D. SIM, Esq., Secretary to Government, Revenue Department, Fort Saint George, dated Camp Chingleput, 28th May 1864, No. 69 (C):—

SIR,

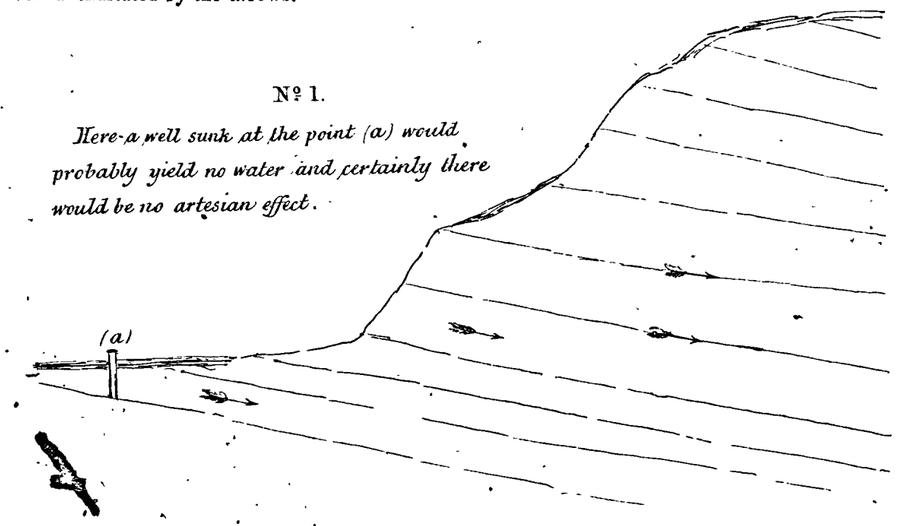
1. I have the honor to acknowledge the receipt by this day's post of a copy of the Orders of the Madras Government, No. 726, dated 27th April 1864, communicating a letter from the Board of Revenue, on the subject of Artesian Well sinkings, bearing date April 25th.

By some mistake this had been forwarded to Calcutta, and was thence returned to my address, and has only reached me to-day.

2. In consequence of the delay which has thus occurred, I am anxious not to lose a moment in submitting for the consideration of His Excellency the Governor in Council any remarks which occur to me upon the suggestions of the Board, and shall be most happy to furnish any further information in our possession or attainable, with reference to a subject of so much importance.

3. In paragraph 3 of the letter of the Board some localities are instanced, as being "in sufficient proximity to hill ranges to indicate *primâ facie* that the system might succeed." On this I would observe that proximity to hill ranges is alone no guide whatever to the applicability of Artesian sinkings, and would afford no guarantee of a fair prospect of success, which depends upon many other circumstances. The neighbourhood of hills, and especially of well-wooded hills, will probably secure a tolerably abundant rain-fall, most valuable as affording a supply which may be artificially stored and utilized, but that this water should be naturally available in store for wells and above all for Artesian wells, many concurring circumstances are, essential; and not only the superficial or physical outline of the country must be considered but its internal geological structure must be carefully examined.

Some of these circumstances will be best indicated by a few sketches, such as I annex, for the extremely rough character of which I must plead in excuse the haste in which I wrote to avoid further delay, and the fact that I have with me in camp neither office appliances, nor means of reference to any illustrations bearing on the subject. I have numbered these outline sketches and refer to them in order: thus in No. 1, we have a plain in immediate proximity to hills, where however we could not, with any prospect of success sink an Artesian well, as the rain falling on the hill side or the plain would find its natural drainage along the line of dip of the strata indicated by the arrows.

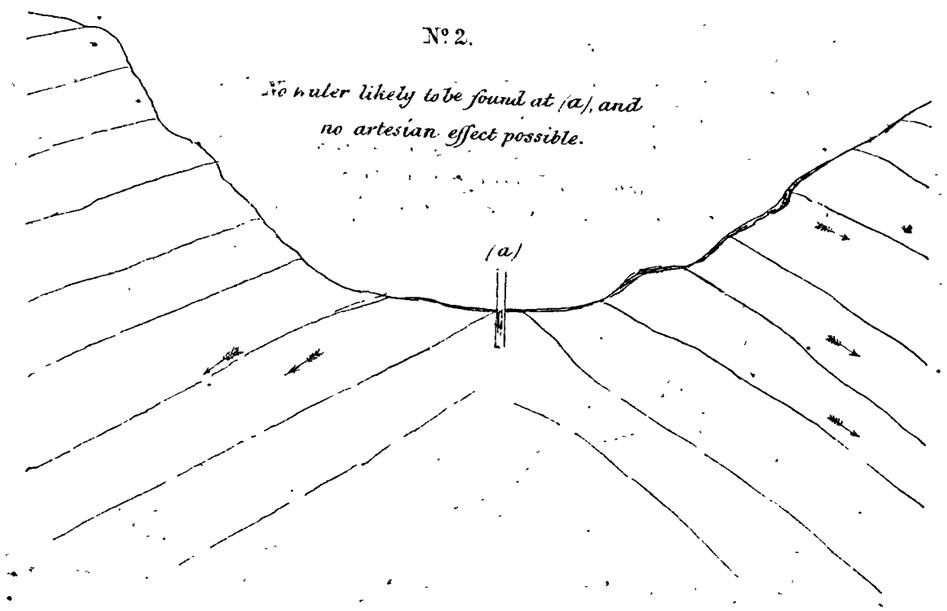


No. 1.

Here a well sunk at the point (a) would probably yield no water and certainly there would be no artesian effect.

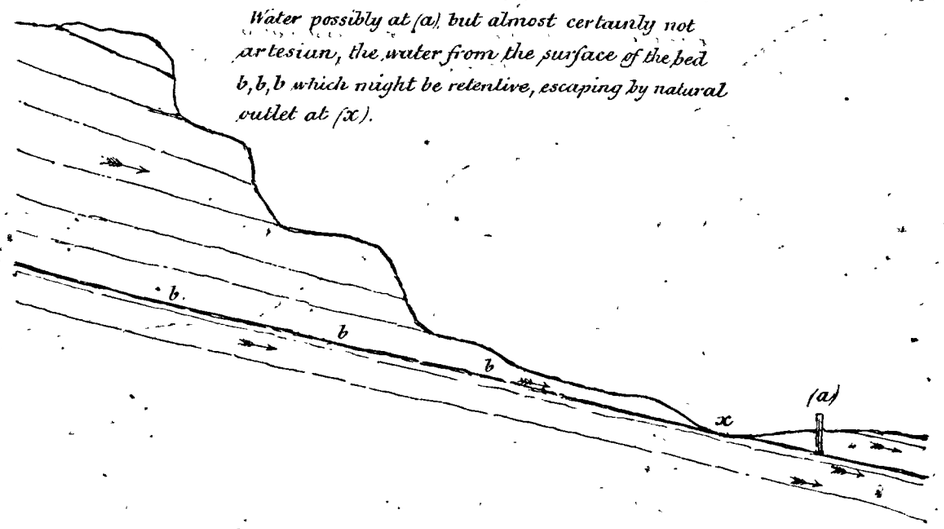
In No. 2, which at first sight upon the surface would appear more promising, we should, if a well were sunk at (*a*), most probably find no water, and certainly there could be no artesian effect. And such structure is of frequent occurrence.

No. 2.



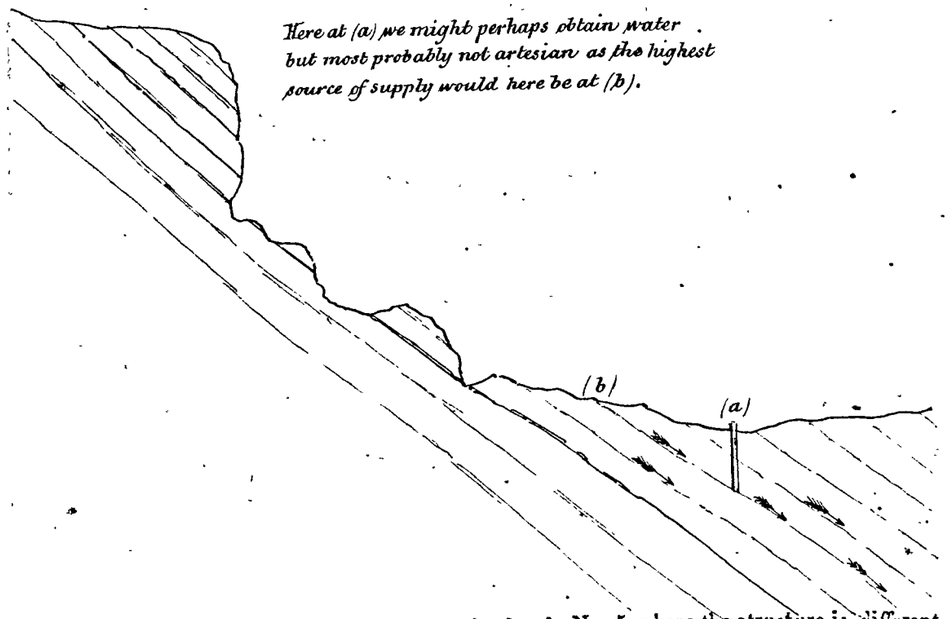
Sketch No. 3 sufficiently explains itself.

No. 3.



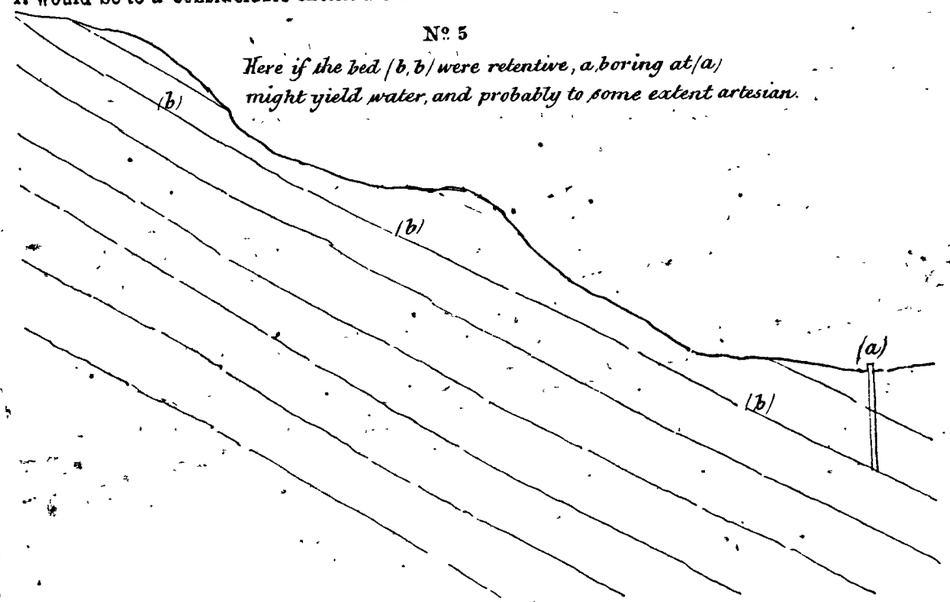
In a situation such as is represented in sketch No. 4, it would (as indeed may be said in almost every case) depend largely on the nature of the strata; their permeability or otherwise, whether we should find water. But, if a well sunk at the point (*a*) yielded water, there would probably be no artesian effect, as the supply would be derived chiefly, or entirely from the rain-fall at or near (*b*), and finding its natural drainage along the dip of the beds; in this and other similar cases, the occurrence of water at all would be problematical, and its possession of any ascending power, more than unlikely.

No. 4.



While in such a case as that represented in sketch No. 5, where the structure is different, while the existence of water would still be somewhat uncertain, we may safely infer that if found it would be to a considerable extent artesian.

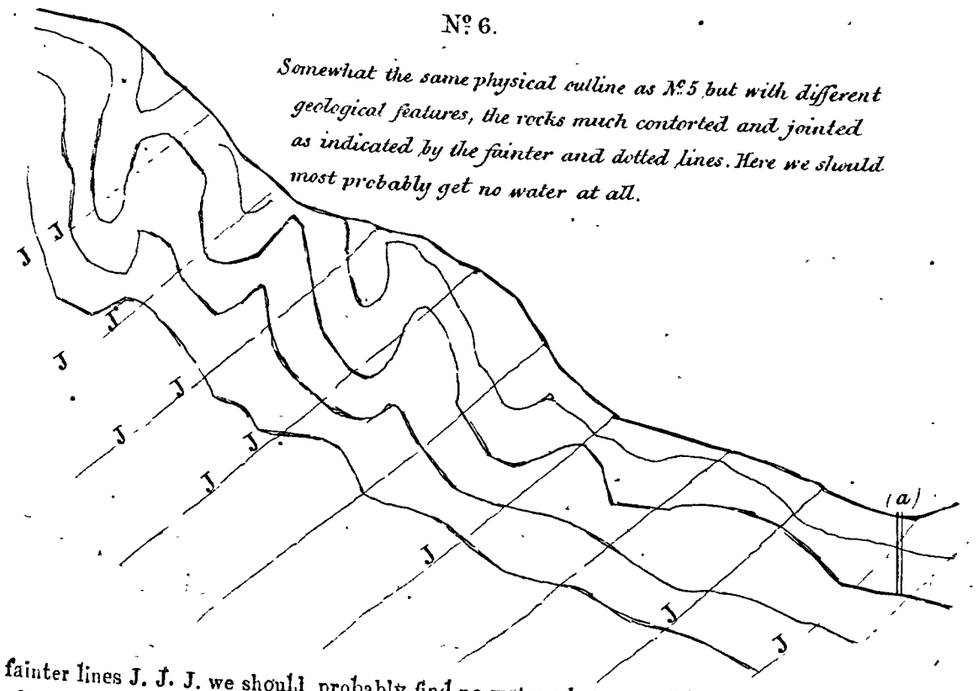
No. 5



In No. 6, however, which presents nearly the same physical outline, but with a different geological structure, the rocks being much contorted, and broken up by joints, indicated by the

No. 6.

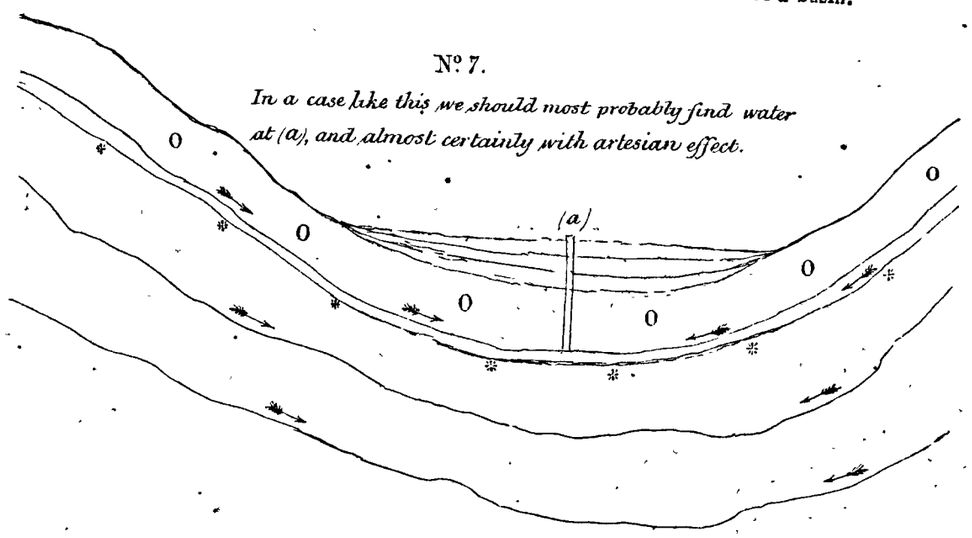
Somewhat the same physical outline as No. 5 but with different geological features, the rocks much contorted and jointed as indicated by the fainter and dotted lines. Here we should most probably get no water at all.



fainter lines J. J. J. we should probably find no water whatever. If, however, we find a series of beds arranged as represented in No. 7, which is a form of structure of no unfrequent occurrence, a well sunk at (*a*) would with great probability be a successful experiment. If, for example, the bed (* * *) be highly impervious to water, while that at (0 0 0) were very permeable, either from inherent character or by reason of numerous jointings or fissures, we might predict, with an amount of probability, almost amounting to certainty, the success of an artesian sinking, and specially if the beds were found cropping out in this way on all sides of a basin.

No. 7.

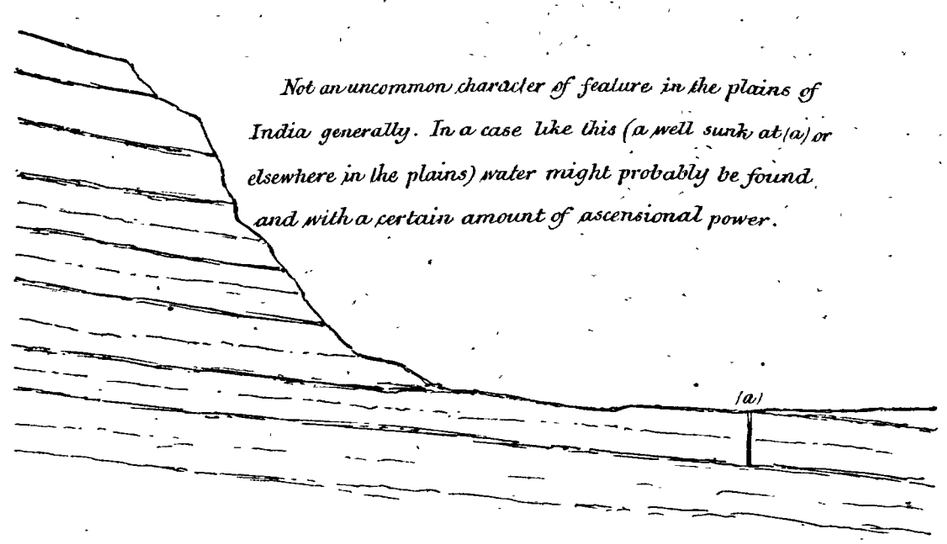
In a case like this we should most probably find water at (a), and almost certainly with artesian effect.



Again, in such a situation as (*a*) in sketch No. 8, a sinking might, with some chance of success be made, and the water if found, would probably have at least some ascensional power, even if not sufficient to make it rise above the surface.

No. 8.

Not an uncommon character of feature in the plains of India generally. In a case like this (a well sunk at (a) or elsewhere in the plains) water might probably be found and with a certain amount of ascensional power.



4. I trust these few rough illustrations may suffice to some extent to show how far, under certain conditions, success may or may not be expected.

But the subject, in referring to the Madras Presidency, is so large an one that it would be very difficult, or impossible to point out, at once, localities in which along with the physical conditions, which would render success probable in endeavouring to procure a supply of water by Artesian wells, there co-existed also the strongly felt necessity for such a supply; particularly so, as the examination of the country by the Geological Survey has as yet extended over but a limited area within the Presidency, and we experience much difficulty in obtaining any reliable information with reference to country outside the area actually surveyed.

5. With reference to the localities specially indicated in the letter of the Board of Revenue, viz., Coimbatore, Bellary and Cuddapah, of the first, Coimbatore, our knowledge is as yet very limited, as the district has not yet been geologically examined, with the exception of the Neilgherry Hills. As far however as I am aware, the rocks of that neighbourhood are all igneous or metamorphic, chiefly the latter, generally inclined at very high angles, and affording little prospect of convenient basin, like repositories of water, and commonly much broken up by joints and fissures, and being therefore quickly and readily drained, and not retentive. For these reasons, I would incline to believe that in that neighbourhood there was but little prospect of an experiment being attended with success.

Of Bellary, in the vicinity of the Ramandroog Range, I have no personal knowledge, nor has that portion of the District been yet entered by the Geological Survey, but I believe that there also somewhat similar conditions prevail, and with the very small rain-fall recorded as the average of that part of the country (as well as I recollect about 17 inches per annum) the chances of success would be materially diminished.

Of the third locality mentioned, viz., parts of Cuddapah, I could speak with more certain knowledge, having myself surveyed a considerable portion of that District, were the locality or localities

where water is specially needed, somewhat more precisely indicated. My impression however is that those parts of the district where the want of water is most keenly felt, are unfortunately just those whose physical features would least justify us in anticipating a successful result in experimental Artesian borings. Over a great part of the basin, in which the town of Cuddapah is situated, and over the greater portion of the Dhoor Valley and extending westward into the Talook of Jummulmudgoo, we have reason to believe that there is a trough-like or basin-shaped structure, somewhat similar to that represented in sketch No. 7, (*et supra*), as the quartzite or altered sandstone, which largely constitutes the hills surrounding the Cuddapah basin, and those on either side of the Dhoor and Jummulmudgoo valley, probably extends continuously under the blue limestone and slaty beds which cover these. So large an extent of ground, although, even here, the character of these underlying beds, supposed to be continuous, would forbid our saying with an approach to certainty, that a boring would be successful, (as they are considerably jointed and fissured where they come to the surface) still, if the necessity for a larger or more constant supply of water be much felt in this part of the District, it appears to be the most likely locality for a successful boring, the area drained is tolerably extensive; the rain-fall not inconsiderable, and the comparative elevation of its source of supply would in all probability give the water ascensional power. I imagine, however, that it is in other parts of the District that the drought is most oppressive, as the wants of these Talooks must be pretty well supplied by the wells, which are very numerous.

In other Talooks, Cuddree for example, and parts of Rochotee and Poolavaindla, where I should suppose the want of water to be more urgently felt, the geological features are such as hold out little, if any prospect of success.

6. If however, the Board of Revenue or Collectors of Districts, could point out more precisely the exact localities in which the water supply is specially needed, I would endeavour to say whether there be any geological probability of success, or if the localities were distant or in parts of the country not yet visited by the Geological Survey, I would try to make arrangements to have them visited and reported on as soon as practicable.

7. If, on communication with my colleagues in this Presidency, I can obtain any further information, with regard to portions of the country examined by them, and possibly affording some eligible localities for experiment, I shall not fail to report it for the information of His Excellency the Governor in Council.

8. At present, as the subject is important and so much time has already passed, I have thought it better to forward these remarks without any delay.

Any further or more detailed information, regarding parts of the country which have been geologically surveyed, I shall be happy to furnish if required, and shall be very glad if it be of service in helping to insure the success of so important an experiment.

No. 219. ORDER THEREON, 17th June 1864, No. 1,044.

Miscellaneous.

1. The Government are much obliged to Mr. Oldham for his useful and interesting letter.

2. The Board of Revenue will communicate with Mr. Oldham on the points noted in paragraphs 5 and 6 of his letter.

(True Extract.)

(Signed) J. D. SIM,
Secretary to Government.

To the Board of Revenue.
„ the Deputy Superintendent of Geological Survey of India.

Exd. S. T. Augustin.

13.

And so much time has already passed I have thought it better to forward these remarks, without any delay.

Any further or more detailed information regarding parts of the country which have been Geologically Surveyed, I shall be happy to furnish if required, and shall be very glad if it be of service in helping to insure the success of so important an experiment.

I have the honor to be
Sir
Your most obedt. Servt.
Chas. D. Oldham
Depy. Superintendent
Geological Survey of India.

Camp Chinglepat
May 28. 1864.

Rev: 18th Dep. Sup.
Pro: of Govt for June.
No. 1417.

From the Off. Supt.
Geological Survey of
India.

Dated 28th } May.
Recd 31st } 1864.

No. 69.

Further Cr 1654/64
do do 1801 "
Pro: Bd of Rev: 8/30 August/64
6 No 2332

Submitting remarks
on the subject of artesian
well sinkings.

No 1064. 17 June
With Records

No. 218 & 219.

1064 No. 1064.

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Fort St. George
17th June 1864.

14 copies to Bd of Revl Dept 18 June
1 " Dy Supt Geological Survey.