
*Contributions to the Geology of Ipswich* is copyright by Edward O. Marks 1923.

Permission granted by the University of Sydney Library and the executors of the estate of Dr Elizabeth Nesta Marks for display of this publication on the QUT SERF website.
 Contribution to the Geology of Ipswich.

TO THE EDITOR, "QUEENSLAND GOVERNMENT MINING JOURNAL."

DEAR SIR,—You were kind enough to print in your December number a letter of mine in reference to Messrs. Reid and Morton’s article on the above subject. I am well aware of the question of principle involved as to the desirability of publishing in an official journal discussions on official reports, but the case was exceptional, and you took the wider view.

Messrs. Reid and Morton’s article was not so much an official report as an expression of their own views on the geological relationship of certain strata in the Ipswich District, views which in some essentials are in marked disagreement with previously accepted ideas, which also had been put forward in official reports by Mr. W. R. Cameron. This divergence of view is a question of geological interpretation, not that the question has an important and far-reaching effect on the study of the Mesozoic geology of South East Queensland, it is not one in which a disagreement involves any reflections as to the ability or accuracy of the other side, or constitutes any adverse criticism of the article as an official report. Moreover, like Mr. Cameron, I was formerly a member of the Geological Survey staff, and am quite disinclined to put forward anything but the friendliest of criticism of points raised in their work.

Messrs. Reid and Morton, I am quite certain, are both anxious to arrive at the correct interpretation which every view, if either can be definitely established, and they would be the first to welcome any discussion which would give the correct views. As a discussion cannot go on indefinitely, an official report has been made to your letter in a manner not directly asking for any answer, though, of course, any further explanation from Messrs. Reid and Morton would be welcome. Though strongly tempted to combat Messrs. Reid and Morton to draw a section across their “Boralon Series” east and west through Ipswich, showing how the present position of the strata had been obtained according to their views.

Though Messrs. Reid and Morton cowl at some minor details in Mr. Cameron’s drawing of the section, they have not ventured to draw one themselves, as they were challenged to. Surely such a failure can only be regarded as a very substantial score for Mr. Cameron. Their verbal description, first of all, is made unjustified an opinion of this or the “Boralon Series” seems to me scarcely intelligible and certainly requires diagrammatic explanation, even if several consecutive diagrams are needed to show the different stages.

(2) In my previous letter it was pointed out that Messrs. Reid and Morton had given no definite proof of their assumed unconformity—no natural section showing the one series actually resting on the other. In their chief section (near the Pumping Station) where Mr. Cameron apparently thought there was an unconformity, they admit that their first impression was that the beds are conformable, although they changed their views...
The western limit of the outcrop of the "Borallon Series"—that is to say, the outcrop of its contact with the Ipswich, Bundamba, and Walloon Series, which are several thousand feet thick with, so they say, some intervening period of deposition.

In order that this supposed overlapping unconformable junction should occur in such an even line it would be necessary for the "structural high" surface to be an almost perfect and uniformly inclined plane, practically free from the effects of denudation.

In any other supposition (except a fault) the junction line between unconformable beds must be irregular, as for example is the usual boundary between the Ipswich Series and the solfatics. Messrs. Reid and Morton considered such a "structural high" would not be unusual. It may seem so extremely improbable as to be practically impossible. It is certainly inconsistent with their own diagrams.

My previous letter was written with some hesitation, as much of the area discussed was unknown to me. Expression was only given to difficulties arising from a study of Messrs. Reid and Morton's article and maps. The true answer to any such problem lies in the field. Though very sceptical of their views, I went into the field prepared to be convinced. I came back convinced that Messrs. Reid and Morton's hypothesis is not supported by any definite field evidence. There is more field-work requiring to be done, particularly—

(1) Near the Pumping Station, where is the only place that Messrs. Reid and Morton describe an unconformable section, and even here it is by inference. If the unconformity is not demonstrable and capable of clear proof in parts 27 and 129, the unconformity apparently cannot be demonstrated anywhere else.

(2) To the south of Ipswich where the map so far published seems to indicate the involvement of the Wallabul sands in the line of earth movement which Messrs. Reid and Morton regard as characteristic of their "Borallon Series" and of pre-Ipswich age. If field work clearly shows this involvement to be the case, the "Borallon Series" would be completely disputed in company with the various subsidiary hypothesis which have been formulated to support the main one.

E. O. Marks.

Economic Waste in Mines.

Assays of certain substances may be determined by the skilled chemist, without fire or grinding the sample, and in a small fraction of time required. All that is needed is a specific method, such as the Jolly balance, which permits the use of the weight of a substance first in air, and then in water.

Presented at the annual convention of the for Steel Treating last fall, Arthur S. Kain, of the Cleveland Twist Drill Company, for the determination of tungsten in high specific gravity which was accurate to within a percent of tungsten present. The method, which has been known since it was first shown that the amount of other constants except variation in different samples. That is, the same the sample, the specific gravity of the end of the latter 7-8. Then it is only necessary to give actual analyses and corresponding or reference purposes.

could seem to have application in other fields. Would it not be possible to determine the in blast-furnace matte by this method? Through the use of the slide rule or logarithms without any more chemical or arithmetical than the ordinary shift boss or furnace foreman in its copper and iron content, and, since between the specific gravities of copper and the results should be at least as for operating purposes. Lead-containing slags, as a rule, do not offer quite the abundant information might be obtained here, as do not show wide variation in composition.

old seem to be worth while to assemble the i of chemical analyses and specific-gravity daily samples and see if some useful relation between the two. Diamond-drill cores, and the rock, in which the character of gauge constant, might also be roughly ascertained by this

lying Without Chemicals.*

* Qingland Government Mining Journal.
On the Scorpens Tin Mine, Herberton.

LIONEL C. BALL, B.E., A.I.E.A., Deputy Chief
Government Geologist.

has come to hand to the effect that 20 tons of 20 pe-
ro has been obtained at this mine near Herberton
nighly regarded as an event of some local importance
ning an incentive to other prospectors on this side
field. The claim was pegged out in January of 1908
or by Messrs. Bassi and O'Malley on the crest of
mile and a-half to the west of Herberton. It is i
wealth of several abandoned leases, and within
of the eastern edge of the Herberton granite intru-
elates along the contact are characterised by th
of numerous deposits of copper ore, as witness th
including the Mount St. Patrick, Richard's Queen, Empress, and many others. Th
long the whole contact might have been expected t
as a matter of fact, the tin leases are grouped al
of Grant Creek, where we have the deserted Princes
pick, Union, Clarence, Archer, Last Fall, &c., the
Scorpens. This part of the Herberton stanniferous
never been in great favour locally, but there is no rea
as good shoots should not be found here as on th
side of the river, the geological components being

The Scorpens outcrop of chloritised and silicified granite has a total length of 3 chains and a maximum w
it is a conspicuous feature of the landscape; but, though sho
of a few inches to as much as 10 ft, in w;
it is quite irregular in outline; 
pyrites, and iron pyrites, and a little bismuth is also 
have been present.

lodes occur in mica schists, for the most part lying 
and dipping with the planes of schistosity, but in 
ones they ooze fissures cutting across the latter 
then almost vertical. The workings principally take 
of open cuts rarely deeper than 20 ft, and the deepest 
is said to have been only 40 ft. on the Socialist list 
of several large conspicuous outcrops were seen which had 
broken, because no shoal could be found for it was this feature which above all 
the position of the workings. The edge of an intrusive 
granite is very far distant from the lodes, and the 
face of a few small patches of this rock within the schists 
highly probable that granite would be found at not 
over the productive portion of the field.

age by pack horse to the coast, either at Lloyd's or
Bay, would cost 50 per ton at the present time, and 
Thursday Island for small lots £ to 23 per ton.

of the men who had previously worked on the field 
their intention of returning should tinlode increase 
to its pre-war level.

field, in my opinion, it has only been scratched, 
and lodes are certainly large enough to warrant exploita-
only by syndicates or companies strong enough to carry 
ipment work on a fairly large scale and prepared to 
temporary sets-back, since the tinlode values are most

Contributions to the Geology of Ipswich.

TO THE EDITOR, "QUEENSLAND GOVERNMENT MINING JOURNAL."

Dear Sir,—

Messrs. Reid and Morton, having published the section demanded of them, I am content, until there is further field information available, to let the geological discussion stand, as it is for those interested to form their own opinion.

It is, therefore, with regret that I am compelled to reply in my own personal capacity, and to give a necessary explanation of Mr. Cameron's section.

Messrs. Reid and Morton accuse me in their last letter of (1) misinterpreting them in several respects, "not wilfully, of course"—e.g., crediting them with a statement that there was a cretaceous uplift to the east of the Borallon series; and also (2) "in setting up a statement like that merely to knock it down again with the retort that it is scarcely intelligible to him, Dr. Marks will perhaps impress those who are not au fait of the arguments, but is scarcely advancing the discussion."
I wish it to be clearly understood that in crediting them with that statement, there has not been any misrepresentation whatsoever. If your readers, and particularly Messrs. Reid and Morton, will refer to their article in the May number of your Journal, on page 168, near the bottom of the first column, they will find—

"Our east-west section . . . would show Bundanba beds higher on the east than on the west, separated by an eroded ridge of highly-folded Borellaon rooks. Briefly stated, our view is . . . that the eastern area has been elevated relatively higher in the Cretaceous uplift than the western area."

If Messrs. Reid and Morton do not mean by those words that there was a Cretaceous uplift to the east of the Borallon series, it is indeed very difficult to know what an earth they did mean. I most certainly have not misrepresented them (their new section shows the uplift), and yet they are so unkind as to suggest that I made the alleged misrepresentation merely in order to refute it, and thus impress those who do not know any better.

Apart from this unfounded charge, they themselves to a certain extent misrepresented me, for what I stated was that their verbal description of the section was to me scarcely intelligible, and required diagrammatic explanation.

I stated that somewhat bluntly for a purpose, but it was perfectly true. For the sake of brevity and to avoid leaving the main line of discussion, I did not explain my difficulty, but will do so now, to show that my criticism was genuine, and not mere platonic or idle gallantry.

Mr. Cameron had pointed out the necessity for some form of downthrow to the east—fault, or fold, or unconformity of the Wallen series. He also pointed out that Messrs. Reid and Morton had not mentioned anything of the sort in their original article, but on the other hand, a fault with a downthrow to the east. In their reply, they do not acknowledge in any way the force of Mr. Cameron's argument—they appear to disagree with it—but proceed by a somewhat complicated explanation to arrive at an uplift to the east.

Stratigraphically, this is, of course, the same thing as the downthrow to the west, which Mr. Cameron had demanded. Now, in the process of explaining this uplift, there was considerable reference to hypothetical thinning out of Ipswich and Bundanba beds, disconformity, and so on, all of which appeared to me to be totally unnecessary, when once they had introduced their uplift, the extent of which could not be estimated. This all seemed to me very confusing, and I naturally thought the diagram might make it clear.

My criticism was both true in fact and well deserved, for they had neglected to provide the diagram which Mr. Cameron had especially challenged them to draw, while at the same time they were criticising Mr. Cameron's drawing. My criticism did advance the discussion, for it has achieved its object in inducing them to produce their section. Only a desire to end the discussion prevents me from criticising it now.

In addition to Messrs. Reid and Morton's section, there has been published a part of the section which accompanies Mr. Cameron's map. It has doubtless been published in order to facilitate a comparison of the two views, but it is not quite fair, inasmuch as it obviously requires some explanation when not seen in connection with the map, which was intended to elucidate. This necessary explanation has, unfortunately, not been given.

Anyone not knowing the map, looking at Mr. Cameron's section, would at once be impressed by the immense thickness of Bundanba sandstone to the west of the fault, and the thinness of it to the east. They might also imagine that the Tertiary beds were conformable with the Bundanba. A glance at the map would show that the section east of the fault just gets the thin eroded edge of the Bundanba series, and that the bed of the section is a little further north, it would not have shown the Bundanba beds at all. West of the fault, possibly, the whole thickness of the Bundanba beds is shown. Nobody knows what this might have been, for the total thickness is not exposed anywhere near Ipswich. Mr. Reid has estimated up to 4,000 ft.

The map also shows the Tertiary beds in a northerly direction on the Bundanba and Ipswich beds. Embedded in the Ipswich and more parallel to the Bundanba—though parallel, they are not, of course, really so. In conclusion, I should like to say that one small piece in the field is worth a volume of argument and many diagrams; I have looked in vain in every locality for a single piece of evidence of Messrs. Reid and Morton that even when Mr. Reid was present to demonstrate a type section.

Yours truly,
E. C. Morton.

June, 31st July, 1923.

Government Geologists' Reply.

The Editor, "QUEENSLAND GOVERNMENT MINING JOURNAL", Sir,—The sentence to which we referred when Marks misrepresented us was "Their verbal description of a fault with a downthrow to the east, and the Cretaceous uplift to the east of the Borallon series is so clearly intelligible and certainly requires diagrammatic explanation, even if several consecutive upward movements are shown in the different stages" (p. 206, June, "Q.G.M. Journal").

We are agreed with Mr. Cameron and Dr. Marks (Marks a relative uplift to the east of the Borallon series interpretation of Ipswich geology but the anomaly is one of opinion only.

On page 168, "Q.G.M. Journal" for May, 1923, the regional Cretaceous uplift probably elevates the west more than the east and that the Post-Tertiary east (i.e., Ipswich side) could reasonably account for the relative uplift demanded of our interpretation shown on the last section is due to lateral and not to the Cretaceous uplift, and the footwall is obviously by comparing the approximate field of the Bundanba series at Hillsstone (east) and Ipswich.

In the next Journal (June) Dr. Marks followed the above quoted statement and from it we infer that he was attributing to us an uplift of somewhere near the West Ipswich fault line, veering with the difference of level of the same. We infer that Mr. Cameron, however, Mr. Cameron has just intimated that in the portion of the above quotation referred to the necessary relative uplift between the two sides of the Borallon, whether of Cretaceous or not.

We regret that it was possible for our interpretation to be so widely from what Dr. Marks wished to convey that it is necessary to state that we had misrepresented only we considered that it was done quite unwillingly in our suggestion in our letter that he had allegation, merely in order to refute it. We certainly were not on our suggestion that Mr. Cameron published for what was considered an interlocutor.

In Dr. Marks' explanation of Mr. Cameron's section letter; it is interesting to note that the Tertiary beds to him by the Cretaceous beds to them are conformable with the Ipswich beds; and that their base is sketched, is a fact not on the base of the Bundanba. Our interpretation is that the Tertiary and the Cretaceous beds around Hillsstone are shown to be c with the underlying Mesozoic beds shown in the Tertiary beds.

J. H. Reid. C. C. Morton.
Government Geologists
Government Geologists' Reply.

TO THE EDITOR, "QUEENSLAND GOVERNMENT MINING JOURNAL."

Sir,—The sentence to which we referred when we stated Dr. Marks misrepresented us was "Their verbal description, first of a fault with a downthrow to the east, and again a Cretaceous uplift to the east of the Borallon Series seems to me scarcely intelligible and certainly requires diagrammatic explanation, even if several consecutive diagrams are needed to show the different stages" (p. 208, June, "Q.G.M. Journal").

We are agreed with Mr. Cameron and Dr. Marks that there is a necessary relative uplift to the east of the Borallons (an interpretation of Ipswich geology) but the amount, within limits, is one of opinion only.

On page 185, "Q.G.M. Journal" for May, 1923, we showed that the regional Cretaceous uplift probably elevated the east relatively more than the west but that the Post-Tertiary folding to the east (i.e., Ipswich side) could reasonably account for the whole of the relative uplift demanded on our interpretation. The uplift shown in our last section is due to late- or Post-Tertiary folding and not to the Cretaceous uplift, a fact that appears fairly obvious by comparing the approximate level of the base of the Bundamba series at Silkstone (east) and Karrabin (west).

In the next Journal (June) Dr. Marks followed this up with the above quoted statement and from it we drew the conclusion that he was attributing to us an uplift of Cretaceous age, somewhere near the West Ipswich fault line, by which we were bridging the difference of level of the same Mesozoic formations on either side of the Borallons, a critical point raised by Mr. Cameron. However, Dr. Marks has just informed us by letter that in the portion of the above quotation in italics he referred to the necessary relative uplift between the east and west sides of the Borallons, whether of Cretaceous or any other age. We regret that it was possible for our interpretation to differ so widely from what Dr. Marks wished to convey as to make it necessary to state he had misrepresented us though naturally we considered that it was done quite unintentionally, and any suggestion in our letter that he had alleged misrepresented, merely in order to refute it, we certainly withdraw.

It was not on our suggestion that Mr. Cameron's section was published for what was considered an interesting comparison.

In Dr. Marks' explanation of Mr. Cameron's section, in the above letter, it is interesting to note that the Tertiary beds are considered by him to be unconformable with the underlying Mesozoic beds—and that their base, as sketched, is more or less parallel to the base of the Bundamba. Our interpretation of Mr. Cameron's sections and in this is that in the Tertiary sedimentary deposits around Silkstone are shown to be conformably folded with the underlying Mesozoic beds with contemporaneous erosion shown in the Tertiaries.

J. H. REID, Government Geologists.
C. C. MORTON.