UR 1861-1920/119-129

GEOLOGICAL SURVEY OFFICE, 119

LAUNCESTON, TASMANIA,

4th AUGUST, 1910.

FEDERAL GEODETIC AND GEOLOGIC SURVEY

Sir,

I desire to bring before your notice an ambitious scheme for a Federal Geodetic and Geologic Survey of Australia which has been recently started by the Chamber of Mines in Melbourne. The Committee services of some University professors and others out of touch with the work now being done by the Survey branches in the different States as well as of some representative mining managers have been secured in support of the movement. The propaganda is being fostered outside by contributions to the press, appeals to Universities etc. with an avoidance of the official centres which direct or control the existing surveys. The Universities may be expected to view with favour the materialisation of any scheme which promises to provide appointments for the young engineers whom they are turning out every year in increasing numbers. But the public generally is in danger of being misled by the reckless statements disseminated in the press by promoters of the scheme. Much of the present newspaper agitation is artificial and the statements made are palpably crude and one-sided.

The Committee announces that the Prime Minister of the Commonwealth has expressed himself as being generally favourable to its representations and that he has suggested that the promoters seek the co-operation of the various State Survey departments. This they are apparently loth to do.

The project embraces the establishment of a Federal Bureau to carry out three objects viz:-

1. A geodetic Survey and triangulation of the whole of Australia.

2. A land and topographic survey of Australia.

3. A geologic survey of Australia.

The first two objects in this list are outside the scope of my memorandum which deals only with the Geological Survey.

The promoters of the scheme draw attention to the federalisation of the State meteorological departments, as if the winds and climatic conditions of Australia which affect the Continent as a whole could furnish any reason for making the correlation of the strata or ore deposits in such widely separated areas as Tasmania and the Northern Territory a Commonwealth matter.

One argument adduced in favour of the scheme is that at present local classifications of systems with varying map colours and scales prevail in the different States. But an approach to uniformity in some of these respects may be arrived at quite as well by inter-State agreement, a method infinitely preferable to a cumbrous Federal bureau. The promoters do not seem to be aware that until systems are definitely correlated uniform colouring on charts is an impossibility. More detail work is necessary in the several States before the positions of many of the stratigraphical groups in the geological column can be positively stated. The next quarter of a century may witness a considerable advance in this direction, and the advance is more likely to result from the accumulated experience gained by the State Surveys, than to be made by new hands turned loose into strange terrains by a young Federal bureau.

A further argument put forward is that the Federal Government could afford to maintain a large staff of experts (in addition to the surveying staff) in the various minerals, who could be sent to any part of the country; and the United States of America are cited as an example.

The United States of America allot annually £350,000 to their Geological Survey, and no inflation of our financial resources will enable the Commonwealth to compete with it.

In the same breath the promoters state that probably a sum of from £15,000 to £20,000 a year will be ample for many years to come. This is no more than is now being spent by the States, and would simply make Australia a public laughing stock.

The promoters at the same time affect to commiserate with the poorer States (Queensland, South Australia and Tasmania) as being unable to afford a sufficient expenditure in consequence of their small revenue. Yet the funds for the Federal bureau would have to come from somewhere, and plainly the States, both large and small, would have to shoulder their share in addition to the work which they are now carrying on.

The promoters refer to the work which is being done by the present State Surveys as being of merely local and limited value. The assumption that because the work is confined to the limits of each State it therefore responds less to public needs is too puerile to require refutation. The detail work done by each State is more likely to

be thorough and useful than if it were in the hands of a huge continental survey in which the parts would be subordinate to the whole. One can easily imagine the smaller States waiting for attentions in the face of claims pressed by the larger and more powerful members of the Confederation.

Further these promoters address the Prime Minister of the Commonwealth with respect to the literature and information distributed by the States in terms of disparagement, stating that the results of the work of the several Geological Survey departments of the various States are confusing and are unworthy of Australia "because information concerning its greatest asset its territorial wealth - is disseminated not by and at the discretion of Australia, but by and at the discretion of its individual States, whose authority cannot make the same impression upon the senses of the world".

Few of these promoters can have much knowledge of the literature with which they profess so intimate an acquaintance. If they knew it better, they would have a more sympathetic appreciation of its worth and cavil less at its limitations.

The combined geological literature of the six States forms a body of research and information of which the Commonwealth may be proud. Its character improves with each year and it is constantly increasing demand abroad by those quite as fully qualified to appraise its value.

It is urged as an additional argument that the Federal bureau would avoid sending to the tin fields in Tasmania an expert ignorant of the mode of occurrence of tin ore.

Manifestly, but this is no reason why a Commonwealth expert should be preferred to a State geologist. The chatter about the Commonwealth being able to specialise while the States can only command inferior talent is absolutely futile. It is safe to say that the specialising talent of Australia in the geology of ore deposits is largely concentrated in the existing State staffs, and that the Commonwealth can only import outside and less useful assistance at great expense. At present each State secures officers most suitable for the work within its boundaries. These officers have in many cases had long experience in the stratigraphy and ore occurrences of their respective States and in the administration of their departments, and are far more valuable now to their State than when they first took office. To cast

aside this wealth of accumulated knowledge in favour of strangers although bearing the stamp and authority of the Commonwealth would be palpably foolish?

Other statements of only partial accuracy put forward by those who are pushing the project might be repeated and refuted, but the above may be taken as their principal arguments.

There are strong reasons why the proposal should be for the present at least withdrawn.

1. There is no genuine demand for the immediate establishment of a Federal Geological Bureau. The Australian Mining Engineers Institute only had in its mind a geodetic and Topographical Survey, and the Geological idea was tacked on as an auxiliary suggestion. These of the mining public who have been won over to its support imagine for the most part that their own districts will be among the first to receive attention. The whole of the continent however will take a century to survey and districts will have to take their turn.

2. A geodetic and topographic survey must absolutely precede the construction of geologic maps. The Physical features of the country must be located and delineated before the geologists can properly use the maps for putting in the geology. To hurry on the geological work with the aid of incomplete maps as suggested by the promoters would simply perpetuate much of the difficulty experienced at present. Geological examination without topographic survey is the cart without the horse. In all civilised countries the topographic survey is the basic and main survey on which all other surveys depend. Rivers, mountains, roads and towns appear on the topographical map, which then becomes invaluable to the State or country for used by its various public departments. Among these departments is the Mining and Geological Service. Mining and Geological mapping is as exclusively a function of the State as are its various cadastral and engineering surveys. Only by a confusion of ideas can geological and mining surveys be mixed up with a national geodetic and topographical survey. The latter is indispensible to the War and Defence departments, Post and Telegraphs &c., but the former pertain to strictly industrial and scientific activities.

3. From the preceding it may be concluded that geological and mining surveys should be conserved as legitimate functions of the States.

4. It is not likely that the States having for years labouriously built up their Geological Surveys, established their literature, erected their museums, housed their collections and at great expense gathered staffs of experienced officers will be ready to scatter to the winds the results of their labours, merely because a committee in Melbourne would like to see geology included in the geographical map which the Commonwealth is now engaged in preparing, and on which it is said that £5,000 Federal money is being spent annually. New South Wales has just spent more than double that amount in increased accomodation for its Geological Survey. The Surveys in the different States are maintaining out of their votes geological museums and laboratories of the assistance of the mining industry, which are inseparably connected with their field work. Field work is proceeding without interuption. If the latter is crippled, the entire activities of the State Surveys will suffer. The proposed interferences with the good work now being effected by the States by the establishment of a Federal Survey which would attract our best officers by higher remuneration cannot be welcome to those who are aware of the continuous efforts made in every State to foster and consolidate its mineral industry.

5. Judging from the progress achieved by similar Surveys in other countries the geodetic and topographic survey of Australia and a subsequent Geological Survey of the whole continent would not be accomplished within a century. The work would involve a large annual expenditure, to which the States would have to contribute; or if on the other hand the expenditure were reduced to fit a more convenient but inadequate and make-shift scheme the result would only be to cover Australia with ridicule in the sight of those who are qualified to judge.

6. A Federal Geological Survey would certainly have to devote its principal attention to areal geology and stratigraphy, for which the States would have to pay, while maintaining their own Surveys for their mining fields and economic geology particularly. The effect would be to increase the burdens of the inhabitants of the States who would have to pay for their own Surveys vitally important to them, and for the Melbourne Chamber of Mines scheme as well.

7. The Federal Survey, in attempting to introduce the uniformity in mapping which the promoters of the scheme so greatly praise, would in reality create confusion by uniting geological

systems and formations which are at present imperfectly known and may be hereafter proved to be naturally separate and distinct.

8. Australia is so sparsely populated and its centres of population are so wide apart that an attempt to link the latter geologically would at present be an uncertain and useless undertaking. Time is necessary for the collection of further information and the carrying out of more detail work before the broad generalisations can be made which would find expression in the publications of a general survey.

9. The extent to which uniformity of scale, colouring, classification and nomenclature is at present practicable can be easily and inexpensively ascertained by concerted action on the part of the existing State geological departments.

10. If a Federal Geological Survey should ever be deemed desirable in the future, it should be undertaken under the advice of those in control of the State Surveys, who possess officers who have actual knowledge of the conditions and progress of the work in the various States.

11. An inter-State conference of the principal officers of the Geological Departments of the several States should in my opinion be arranged in order to discuss the standardisation of their Surveys and to prepare a joint report on the scheme for federalisation.

12. In a recent cable advice from Melbourne the officers of the Home Affairs Department are made to state that there is no intention of duplicating the work already done in the States and that they do not agree with the Director of the Geological Survey of Victoria that the proposal would involve a heavy tax upon the State.

It would be interesting to know whether this statement by Public Service officials has been authorised by the head of their Department, or whether the message has emanated from the propagandists, whose contention that the work is to be done for next to nothing must not be taken seriously.

The officials of the Home Affairs Department have yet to prove themselves competent judges, and the statement is unsupported by any figures of particulars of the work in view. In fact the authors of the scheme confine themselves to quoting some generalities from American books and have yet propounded anything definite. On the one hand

moreover they argue that the financial resources of the States are too small for these to attempt the work, and on the other hand wish us to believe that the Commonwealth can carry it out at a trivial cost.

Tasmania has an area of 26,000 square miles, and it may be asserted without fear of contradiction that a complete topographical and geological survey of the island would cost for the mountainous and bush country £20 to £30 per square mile plus supervision, administration and publication expenses, and for more or less open country £10 to £15 per mile on a useful scale. How this work can be accomplished without serious cost to the State is inconceivable. Reckless statements of the sort carry their own refutation.

Recommendations.

While depreciating the appearances of a New Federal institution in the geological field, swelling expenditure without corresponding immediate results, I would urge the further strengthening and expansion of our existing Survey branch, with a view of fitting it to respond more fully to the needs of the mining population and the requirements of the State in general, always be it understood, in accordance with the appropriation available.

A. Topographical Maps.

I would propose that the Lands and Survey Departments undertake the issue of topographical maps, beginning with the mining districts on a scale not smaller than Two inches to the mile. The mining community is in great need of such charts, and they are indispensible to the geologists occupied in the field. A topographic map is the base of the geological map, and without it, the geological charts must be of a sketchy nature. I look upon this as one of the most urgent measures which can be proposed. The absence of such maps in this State has impeded the progress of the geological survey more than all other causes combined.

B. Geological Laboratory.

From time to time I have called your attention to the absence of assaying facilities and I would advise that a laboratory attached to the Geological Survey be provided and a chemist engaged to carry out the work in same. An opportunity of obtaining the rooms necessary now occurs in the re-arrangement of the accommodation at the Public Buildings in Launceston. The present arrangement with the Government Analyst who as I

believe supposed to do our work at his own cost has a restrictive effect and is altogether unsatisfactory.

Such a laboratory as I propose would among other things carry out assays for prospectors throughout the State, and these assays should be free.

Analyses of our coal and shales, of our rocks, building stones, clays and useful minerals generally, tests for rare earths, radium etc., assays of minerals on reward sections applied for, research work and generally work of economic value would be in constant operation and published for public information.

C. Geological Museum.

I would also propose that the present exhibition of the Geological Survey collections in the Victoria Museum, Launceston be encouraged and strengthened by voting a sum for cases and recognising the collection and display and arrangement of the minerals as an integral part of the duties of the geological staff. It would mention that in acknowledgement of the Government assistance in providing an additional gallery for the Museum the Municipal Council has placed at the disposal of the Department of Mines one third of the Museum building for the State Collections as well as several cases (16 in number) for their display.

To provide for afuller display several more cases are requisite and I would suggest that the Government provide the same. If a full supply of cases is available a complete representation of the ores and minerals of the island can be made, serving as an advertisement of our resources to the general public, besides being of incalculable benefit to prospectors and students generally. The maintenance of a museum of economic geology is one of the first functions of a geological department. The other States of the Commonwealth lay out thousands of pounds on this object, and in a State with the unparalleled mineral resources of Tasmania I think that the Mines Department is bound to second its officers' efforts to make a worthy display of its mineral wealth.

D. Appointment of Statistical Officers.

Another suggestion, though involving additional expense, would be a forward step in the literature of the department by improving radically the Progress Report which distributes our mining statistics every quarter through the civilised world. At present this is virtually

restricted to the publication of bare statistics and of such scanty information respecting mining operations and prospects as mine managers care to supply. The geologists are unable to visit mines, excepting such as are within the area which at any given time they may happen to be inspecting. Consequently many mines get no mention in Government publications and the public remain without information concerning new discoveries beyond what is given in casual and often unsatisfactory notices in the press. To remedy this state of affairs I would suggest the appointment of two Statistical Officers one for the Western and one for the Eastern part of the island, whose duties could consist in visiting all the mines and new discoveries once in each quarter and embodying the result in a quarterly progress report, to be revised and edited in the geological department and then transmitted to you for your quarterly Report. The official statistics of the latter could continue to be collected as at present. The new officers could be stationed perhaps at Zeehan and Derby.

In this way a mass of information could be procured and published promptly. The officers should possess a facile pen, some geological knowledge and have a certain amount of mining experience. I think we could find such without going beyond the borders of our own State, and I am sure the proposal will commend itself to our mining men, as one calculated to fulfil their requirements and at the same time serving to give free and full advertisement to our mining fields.

E. University Science Students.

A further improvement, upon which I need not dilate, as you intend to bring it forward in your annual report, is to invite one or two of the University Science students each year, in their vacation, to examine and report upon mining or other areas to be allotted to them for that purpose and to publish their reports and maps as Geological Survey Bulletins. They will be temporary <u>volontaire</u> officers attached to the Survey for the time being. Their travelling expenses and the publication expenses would be borne by the Government. The students would gain valuable field experience and useful additions would be made to the Geological Survey work.

F. Government Prospectors.

I believe you are already considering the question of subsidising prospectors to be selected by the Department and to work under the surveillance of the Geological Survey. If a wise choice can be made and the work properly inspected, good results will probably ensue.

G. Draftsman.

The appointment of an additional draftsman to keep pace with the increasing issue of geological maps and plans was taken into consideration and turned down last year. Nevertheless it remains a desideratum and the work in the near future will undoubtedly continue to increase. Materials for the new geological map of Tasmania are accumulating and cannot be utilised promptly without drafting assistance.

H. Office Accommodation.

In the new arrangement of officers in the Public Buildings, Launceston, a room for the Assistant Geologist is highly necessary, also a work room for the storage and testing of minerals &c. A further desideratum is a map room for keeping the numerous maps which are being added constantly to our stock. If a laboratory is decided upon, a suitable room can be added also.

I. Inspection of Mines.

The inspection of Mines is intimately bound up with the Geological Survey, and we have one office for both branches. The services of the inspectors are already utilised by the Survey in making special reports and their usefulness may be occasionally be advantageously extended in this direction without interfering with their regular duties.

CONCLUSION.

I must leave to you to consider to what extent you can approve of and further these arrangements, but I have I think said enough to make it clear that channels of State expenditure exist which are entitled to first attention. The needs are legitimate and within our own boundaries and it would be truly deplorable if taxation for federal bureau innovations were to put it our of our power to satisfy them.

The adoption of some of the suggested measures would enable the Survey to advance along the lines generally recognised in such work.

The system at present followed is dictated by dominaant mining needs. The mining districts are being persistently examined, leaving the connexions between them to be worked up subsequently as opportunitites arises. The inevitable result is that we have for the present disconnected centres and this prevents us from publishing general maps.

But if the Lands and Surveys Department will issue topographic maps and if the proposal for the engagement to statistical officers materialises, work can be extended to the outlying unexamined areas. The island can be divided into 40 or 50 quadrilateral sections for survey each 20 or 30 square miles in extent and the work can proceed on these systematically, completing each section one by one.

The primary need is the construction of topographical maps and if this cannot be arranged for through the Lands and Surveys Department the engagement of a topographical surveyor to be attached to the Geological Survey will be necessary, but I do not think that the Mines Department should be asked to bear this expense.

It seems to me that the time has arrived to face the matters discussed above. If you desire to be furnished with details arising out of any of the proposals which I have made, I shall be pleased to supply them.

I am,

Yours faithfully,

W.H. TWELVETREES.

GOVERNMENT GEOLOGIST.

W.H. Wallace Esq.,
Secretary for Mines,
HOBART.