

The following is a printed copy

Ingenio Effodere Opes.

The Ballarat School of Mines, Industries, & Science

(IN THE UNIVERSITY OF MELBOURNE).

MEMORANDUM addressed to the President and Council of The School by the Professional Staff.

Adopted at Meeting of the Council held 26th August, 1892, and ordered to be printed for the information of Members of the Legislature.

"A copy of the Rules relating to the management of Technical Schools in Victoria, issued by the Department of Public Instruction, having been submitted to us by the President for consideration and report, we beg respectfully to suggest that the Council of The School urge its protest against, firstly, the classification of the Ballarat School of Mines with the Technical Schools; and secondly, the allotment of the grant in aid of School of Mines as set forth in the Schedule before us.

"Inasmuch as the Ballarat School is affiliated to the Melbourne University, its lectures appointed subject to the approval of the University Council, and the University represented by six members upon the Council of The School, in accordance with the terms of affiliation, we submit that the Ballarat School should be exempt from classification with the Technical Schools.

"Strong in the possession of so valued a privilege, this Institution has, nevertheless, other and perhaps more weighty reasons for opposing the change contemplated by the Education Department, and, as far as they have suggested themselves to us, we beg leave to bring these reasons under the notice of the Council.

"This School has instituted examinations in mining and science subjects, and has for years been issuing certificates upon the results of such examinations, conducted by outside examiners, including Baron von Mueller, Professors Sir F. McCoy and W. C. Kernot, Messrs. Ellery, Rosales, Newbery, Blackett and others.

"These certificates are now widely recognized, and command a well-earned respect in the mining community.

"Further, The School has elaborated and established three-years' courses of instruction in Mining, Metallurgy, and Geology, and courses in Agriculture and Electricity, the details of the curricula having been published for some time, and distributed over these colonies and beyond them. Already 18 students are pursuing these courses for the Associateship of The School, and are at present in their first, second, or third years. Under these circumstances any such radical change as that involved in the adoption of the new regulations would be calculated to produce such a feeling of distrust in the stability of The School and its certificates, that we should lose probably for ever and beyond recall the position which, after 21 years of steady educational effort, we have so hardly won, and it would, we believe, be a serious blow to the cause of mining education in the colony.

"Seeing that the regulations before us do not declare, except as regards the Art Department, what the standard of education of the technical schools of Victoria is to be, nor whether the standard is to be uniform throughout these schools, it is difficult at present to enter into details.

"Reading the regulations, however, by their own light, the immediate result of their application to this School would seem to be the sudden lowering of our educational standard to a level valueless for the higher purposes of our Institution, and we should simply revert to the condition prevailing here at least 10 years ago.

"To illustrate the serious results that would seem inevitably to follow the application of such regulations to an advanced school, we may point out that in the Geology Course, for example, we should probably be in a better position financially if the present curriculum gave way to a series of locally coloured geological discourses, blended with some elementary blowpipe practice. Possibly for a time we might draw a larger concourse of hearers than under prevailing conditions, but need it be said that the plan is wholly unworthy the consideration of a scientific institution.

"The subjects of Geology and Mineralogy are treated in this School under the following heads, viz. :—

GEOLOGY—

- Petrography
- Physical Geology (Dynamic and Structural)
- Stratigraphical Geology
- Chemical Geology
- Geological Surveying
- (Also General Geology to Miners)

MINERALOGY—

- Crystallography
- Systematic Mineralogy
- Descriptive Mineralogy
- Determinative Mineralogy
- Laboratory Practice
- (Also General Mineralogy to Miners)

"The complete three years' course in each of these two subjects comprises no less than 240 distinct and progressive lectures, and under ordinary circumstances the student takes up the several sections of each subject successively, not simultaneously. Remembering the number and diversity of other compulsory subjects to which the 'regular' student must devote his time, it has been found expedient to limit the lectures in each section to one a week, equal to 10 per term, the

the intention being to afford the student opportunity for closet study and recapitulation with the aid of the models and specimens in the Museum. Under the proposed rules, the number of lectures, if they are to receive full departmental recognition, must be not less than 15 per term per subject. There is here, we apprehend, a tendency that the element of expedition may overshadow that of thoroughness, and we deem it right to state that there is no recognised School of Mines or Mining Academy in the world whose lecture courses extend over a lesser period than three years. The instance just given is merely representative of the general system pursued here in common with similar institutions of the old world. Most of the other branches of science which find a place in The School's curriculum are subdivided into two or more subjects, thus—Mathematics into 10, Applied Mechanics into 2, Surveying into 2, etc. (all as much distinct subjects as the divisions of the Art Department), while in some cases individual subjects are again split up into two or even three stages. The generalisation proposed under Rule 5 must thus lead to endless confusion, while it will result in what we cannot help considering an inequitable distribution of the grant. It will further be seen that if Rule 8 be enforced, fixing the maximum number of subjects for any one student at 2, then for a student attending, say, 3 subjects of Geology, 3 of Mineralogy, 3 of Mathematics, 2 of Applied Mechanics, 2 of Surveying, or a total of 13 subjects,—quite a common occurrence—The School will receive on the basis referred to no more than if that student attended in two subjects only, and the instruction thus supplied by The School in the remaining 11 subjects would receive no recognition whatever from the Department. A small school confining its instruction to a single subject in each of two science branches would, on the capitation basis, be entitled to the same remuneration for a student attending these two subjects as the Ballarat School could claim in respect of a student attending the whole 13 subjects enumerated above.

"Again, in the case of Students entered for the three-years' courses, who spend from 5 to 7 hours per day, or from 25 to 35 hours per week at The School, receiving instruction all the time, The School will receive for each of these, that is for 35 hours' instruction, the same grant as for a student who takes up two subjects only and attends for 4 hours a week perhaps in the evening.

"The indentured students are bound to take up on an average 13 subjects, while many of the non-indentured students engage in 4 or 5 subjects or more. In the expensive Laboratory classes, the inapplicability of the proposed basis of distribution of the grant to this School is even more apparent. Of the various laboratories (the chemical, mineralogical, physical, biological, metallurgical, and mining laboratories), let us take the chemical and metallurgical. According to the Schedule the minimum duration of each attendance for these two subjects is 1 1/2 hours, and the minimum attendance per term is 15. This would give 22 1/2 hours for the total attendance for the term and for this The School would receive 10s. grant in aid for supplying the students with reagents, etc. Most of the students in Chemistry and Metallurgy, all those who are proceeding to the Certificates in these subjects, attend for at least 5 hours a day for 5 days a week, or 250 hours per term, using reagents all the time, and yet bringing The School the same portion of grant (10s.) for the 250 hours' work as the student who, by coming on two evenings a week for an hour each, works out his minimum attendances.

"Among the classes detailed under Rule 5, Biology, which is a necessary mining school subject, finds no place. There are at least four other most important educational departments in this School which do not come within the scope of the Schedule and which yet have a most intimate bearing upon mining education. Firstly, the Museum, an expensive, yet necessary adjunct to the Geological and Mineralogical department, in addition to its use for class instruction, and for private study by the student, is open daily free to the public, and the mining and general public avail themselves very largely of the privilege. In addition to exchange collections sent to various bodies outside the colony, collections, adapted to purposes of instruction, of typical minerals, rocks, and ores, accompanied by descriptive lists, have been prepared and presented to the Agricultural College, and to a number of State schools in Victoria. Similar requests, chiefly from State school teachers, to be supplied with material for object lessons, continue to be received, one of the latest being from the West Gippsland Teachers' Association for a School Museum for the advantage of State school teachers. These applications are acceded to as promptly and as liberally as the limited stock of duplicate specimens will allow.

"Secondly, the Mining Laboratory, erected and maintained at a large cost for the twofold purpose of, on the one hand, affording the mining and metallurgical student the opportunity of personally conducting the treatment of parcels of ores by crushing, amalgamating, roasting, chlorinating, leaching, etc., and on the other, of making careful and reliable tests of parcels of ores by various processes for the mineowner, prospector, or the general public. A considerable amount of assistance has in this way been rendered the mining industry by ascertaining through practical experiment suitable methods of treating certain ores, and from time to time The School is informed of the success attending the adoption of the suggestions forwarded from this department of The School.

"Thirdly, the Model Mine, with its shaft, cages, drives, adit, timbering, etc., steam engine, and other accessories, or the purpose of instruction in Mining, Enginedriving, and Underground Surveying.

"Fourthly, the Electrical Plant, which in view of the wide and still widening application of Magnetism and Electricity to Mining and Metallurgy, to go no further, is daily taking a more important place in mining education.

"The Gauge Tower contains complete apparatus for testing both pressure and vacuum gauges, and frequent advantage is taken, by mining companies and others, of this opportunity of having their gauges subjected to a reliable test.

"All these departments, which have now become integral parts of The School, are naturally attended with considerable cost for maintenance, for which no provision whatever appears in the scheme before us.

"It will be observed that throughout we have confined our observations strictly to legitimate mining subjects, to those sciences only which are embraced in the curriculum of every complete School of Mines.

"The scheme proposed is doubtless well suited for evening science classes and for art classes, for which alone such an arrangement is adopted by the South Kensington department in Great Britain. In those cases the lectures and instruction take up only a small part of the teacher's time, usually his spare evenings, and art instruction can for the most part be conducted with an inexpensive outfit. The Ballarat School of Mines, however, is not simply a school for evening classes, since the most important part of the work is performed during the day, and as most of the lecturers are engaged upon their work all day, they have to be salaried for their whole time accordingly.

"The School does not merely prepare students and issue certificates in single science subjects. Its chief work is to train up students for those professions most intimately connected with the mining industry, and which, in a mining community, will generally be allowed to rank high in importance. The mining manager, the mining engineer, the geologist and geological surveyor, the metallurgist and assayer, the electrician, the analyst, etc., are surely as valuable men to the country in their way as graduates in arts; and they cannot be educated by attending a few lectures a week or by working a few hours a week in a laboratory, but require such continuous, systematic, and progressive training as this School has now prepared itself to supply, which it has been supplying for some time past, and which is not supplied by any other school in Victoria, or indeed in Australasia.