

17 May 1907

17th May, 1907.

A meeting of the University Council was held on the above date.

There were present :-

The Vice-Chancellor (in the chair)
The Pro-Vice-Chancellor.

M ^r Adamson.	Professor Macfadyen
Professor Beattie	Professor Marais
D ^r Beck	Hon M ^r J. X. Merriman
Sir Bisset Berry	Professor Morrison
D ^r Brill	Professor Notcutt
D ^r Flint	Professor Ritchie
M ^r Fremantle	Rev. J. M. Russell
D ^r Gregory	M ^r J. Slater
D ^r Haylop.	Professor Viljoen
Professor Hahn	Professor Walker
D ^r Kolbe	Hon. M ^r Justice Wessels
Professor Logeman	M ^r Whitton.
Professor Mackenzie	

The Registrar and the Assistant Registrar were also present.

The minutes of the previous meeting were read and confirmed.

Before proceeding with the regular business of the meeting the Vice-Chancellor said he wished to convey to the Pro-Vice-Chancellor the congratulations of the Council on his having received from the University of Cambridge the Honorary Degree of Doctor of Laws. The Vice-Chancellor also stated that the Pro-Vice-Chancellor had been instrumental in raising a sum of £1300 towards the fund for the erection of the Hall portion of the University Buildings and moved that the thanks of the Council be conveyed to the Pro-Vice-Chancellor for his services in this matter. This was unanimously agreed to. The Pro-Vice-Chancellor replied in suitable terms.

The Vice-Chancellor stated that he had received a letter from the Trustees of the Carnegie Institute, Pittsburgh, Pa. announcing the completion of that Institution and desiring the felicitations of the University as a contribution to the opening ceremony and that, as the time was too short to permit the transmission of a letter of

Attendance.

Minutes read.

Congratulations to Pro-V.C.

Donations to Building Fund.

Congratulations to Carnegie Inst. on opening.

congratulation, he had cabled "Heartiest congratulations".

A letter was read from the Assistant Under Colonial Secretary reporting that the Hon. Mr Justice Wessels had been appointed as a member of Council for the Transvaal in place of Mr Advocate Smuts resigned.

Mr Justice Wessels was appointed a member of the Law Committee, and Dr Brill and Mr Adamson members of the Literature Committee.

Leave of absence from this meeting was granted to Dr Muir and to Mr Tucker and from this meeting and that in August to Rev. Canon Jenkins.

A letter was read from the Secretary of the Education Department for the Transvaal pointing out that the local expenses in connection with the University and School Examinations exceeded the funds available for that purpose by about £40 (forty pounds) and requesting that, for this year, the amount be refunded by the University in reimbursement of this expenditure and it was resolved that the request be granted.

A letter from the Vice-Chancellor and Principal of the University of Aberdeen was read offering the thanks of that University for the Congratulatory Address forwarded on the occasion of its Quatercentenary Celebrations.

Mr J. W. Jagger ^{M.L.A.} was reappointed a member of the Council of the South African College his seat having become vacant through effluxion of time.

A letter from the Assistant Under Colonial Secretary was read reporting that the necessary steps were being taken by the Government for the drafting of a Bill for introduction in the ensuing session of Parliament to give the Council power to confer degrees in Divinity.

The courses of study proposed to be pursued by the Scholars of 1906 were submitted in the form of the following extracts from letters received from them and approved.

Miss Tucker:

Porter Scholar.

"My main object is to study Experimental Psychology, Ethnology, and Anthropology with a view to doing research work in those sciences. But to help me in this work I propose taking up Physiology and a certain amount of Anatomy. I shall probably divide my time between Oxford or Cambridge and a German University.

In England I hope to write a Thesis on some subject connected with Psychology for which a certificate is given by both Oxford and Cambridge. At present it is impossible for me to give fuller parti-

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culare as Professor Loveday is going to make arrangements for me on his arrival in England. I shall however send fuller particulars as soon as possible if this course is approved of.

At the same time I wish to ask for permission to defer my Scholarship until next year. My hand is still too weak to be of any use, and I have been advised to give it complete rest for a year.

If I obtain this permission I shall proceed to Europe either at the end of this year or at the beginning of next."

Mr. A.M.Jacobs: Jamison Scholar.

"I propose to take the M.A. Examination in Chemistry of the Cape University in December, and to proceed to a German University early in 1908 to pursue a course of study leading either to the Ph.D. or Doctor of Engineering degree."

Mr. L.J.Krige: Ebdon Scholar.

"I propose to enter Cambridge University at the beginning of the October term of the current year, and to work for the Mechanical Sciences Tripos, with a view to going in for Civil Engineering."

Miss Edith L. Stephens: Queen Victoria Scholar.

"During the remainder of this (the first) year, I propose to do research work in the Botanical Laboratory of the South African College. The subject of my investigations is the life-history of the genus Sarcocolla, with which I have already made some progress. Towards the end of the year, probably in October, I should proceed to Newnham College, Cambridge, and continue research work there under Professor A.C.Seward, F.R.S. At the end of the third year of tenure, I intend to return to South Africa, and sit for the second part of the M.A. Examination."

Mr. John M. Murray: Queen Victoria Scholar.

"I have made application for admission to Worcester College, Oxford, and shall probably proceed to enter upon residence there in September of this year. It is my intention to claim to be admitted to the status and privileges of a Senior Colonial Student and so to be exempted from Responsions and the First Public Examination. In this case I desire to follow the course of study prescribed for the Honour School of Jurisprudence, which extends over two years and includes a Preliminary and a Final Examination. If successful in passing these examinations and so obtaining the degree of Bachelor of Arts, I wish to devote the third year of my residence to the study of the work of the B.C.L. course."

Mr. Wilfried P. de Villiers: Maynard Scholar.

"I intend to proceed to Ghent to study there for the degree of Doctor of Literature, but as the academic year begins only about the middle of October, I propose to go to Stellenbosch till that date and occupy myself with preparatory studies for the above-mentioned course. The proposed course in Ghent will occupy two years and so I would be very glad if the scholarship could be commuted into one tenable for two years."

Application for exemption from Adv. Piano Examination as preparatory for Teacher's Diploma Exam.

An application by the Acting Director of Education for the Orange River Colony on behalf of a candidate for the Music Teacher's Diploma Examination for exemption from the Advanced Piano-forte Examination on the ground of having passed the corresponding Examination held by the Associated Board in England was submitted and agreed to

Report of the V.C.'s Committee

The Vice-Chancellors Committee reported :-
(a) That it had admitted the following persons to the examinations specified:

(1) To the Final (Partial) LL.B. Examination:

William D. Munro.

(2) To the B.A. Examination:

James Pattison.

(3) To the Intermediate Examination in Arts:

James Gillespie.

William White.

(b) That, with reference to the invitation of the League of the Empire to send a representative to the forthcoming Federal Conference on Education in London, it ^{had} ~~was~~ decided to thank the League for the invitation and to express regret that the Council was not in a position to appoint a representative.

(c) That it had awarded the Porter, Jamison and Ebden Scholarships as follows:

Porter : Miss Tucker.
Jamison : Mr. Jacobs.
Ebden : Mr. Krige.

Note.

At the last meeting of the Council it was decided that these Scholarships should be awarded as follows:

Jamison : Miss Tucker.
Ebden : Mr. Jacobs.
Porter : Mr. Krige.

subject to the opinion of Counsel being favourable as to Miss Tucker's eligibility to hold the Jamison.

The opinion of Counsel was found to be unfavourable but, as Miss Tucker had intimated that she had decided to waive all claim to the Scholarship and as she could not comply with the conditions of tenure of the Ebden, the Committee had no option but to award the three Scholarships as stated above. * See inset

(d) That acting under the powers conferred upon it by the Council, it had approved on behalf of the Council of the nomination of Mr Justice Wessels as a member of the Council in place of Mr Advocate Smuts resigned.

Report of
the Survey
Committee

The Survey Committee reported that under the provisions of Ordinance 55 of 1903 (Transvaal), it had exempted Adolphus F. Eoll from the whole of the Examination in the Theory of Land Surveying.

Report of
Special
Committee

on Mr
Gross-
kopff's

Application
for a
Fellow-
ship.

The Special Committee appointed to deal with Mr Grosskopff's application for a Fellowship reported that it had awarded Mr Grosskopff a Fellowship of £200 per annum, tenable for two years, the subject on which Mr Grosskopff proposes to prosecute his researches being as follows:

"The influence of English and German Literature on each other as illustrated by the History and effects of the travelling companies of English comedians and actors ("Die Englischen Wandertropfen") who visited Germany, Denmark and the Netherlands at the end of the sixteenth and during a great part of the seventeenth centuries."

COUNSEL'S OPINION.

The question put to me is whether a Competitor born in the Cape Colony whose parents are domiciled in the Cape Colony at the time of his birth, but who are no longer domiciled here, is eligible for the Jamison Scholarship.

Clause 3 states that Competitors must be the sons of parents domiciled in the Cape Colony and must have been born within the Cape Colony. The first impression conveyed by these words would seem to be that the Competitors must be the sons of parents who are domiciled in the Cape Colony. That would seem to be the ordinary grammatical reading. But there are considerations which militate against this reading.

The endowment was for the benefit of young men born in the Cape Colony with a view to professional study in Europe and the subsequent practice of the profession in this Colony. The mind of the Donor was evidently directed to the contingency of a child being born in the Cape Colony whose parents were merely sojourners.

Unless therefore the Competitor were a son of parents settled in this country, and who intended to continue to live here and to make their home here, the intention of the Donor that the holder of the Scholarship should practise his profession in the Colony was not likely to be carried out. Hence the condition attached that the parents should be domiciled here. But if this is so, then it would hardly be in accordance with the Donor's intention that a young man, the son of old-established and long settled inhabitants, e.g. the son of some Dutch farmer whose people have been in the country for centuries, should not be eligible if his parents were not alive at the time of the Competition.

To read clause 3 therefore as meaning "who are domiciled", would seem to be such a narrow construction as to defeat the Donor's intention. The difficulty then arises, if the words in clause 3 are to be read in the wider sense of parents who have been domiciled in the Cape Colony, where is the limit to be?

I think that the real meaning of the Donor was that the Competitor should be the son of the settled inhabitants of this Colony and that the fact whether they are alive or not at the time of the Competition only affects the evidence as to whether they ~~are~~ were domiciled or not. If they are alive at the date of the competition then the question is are they domiciled here; and if they are deceased then the question is were they domiciled at the time of their death. In either case if the answer is in the affirmative I think the Competitor complies with the requisite intended by the Donor, viz., that he is the son of parents domiciled in the Cape Colony.

In this view I am of opinion that the answer to the question put to me must be in the negative.

It is hereby notified for general information that Mrs. JAMISON has placed £5,000 at the disposal of the Board of Public Examiners, and that the Board has accepted the trust reposed in it, subject to the conditions stated in the following Memorandum.

C. B. ELLIOTT, Secretary.

MEMORANDUM.

Mrs. Jamison's Endowment.

1. A sum of £5,000 is placed at the disposal of the Board of Public Examiners of the Cape of Good Hope to advance the education of young men born in the Cape Colony, by offering to competition, from time to time, a Scholarship of £200 per annum, to be known as Mrs. Jamison's Scholarship.

2. This Scholarship is founded to enable a holder of the Second-class Certificate in Literature and Science to pursue and complete a course of professional study in Europe, with the view of afterwards practising his profession in the Colony.

3. Competitors must be the sons of parents domiciled in the Cape Colony, and must have been born within the Cape Colony, and must have attended the classes of the South African College continuously for the two years just preceding the date of competition; and, further, must have obtained the Third-class Certificate in Literature and Science.

4. Competitors must be under twenty years of age on the day when the examination commences.

5. The Scholarship will be given to the competitor who shall take the best certificate of the Second-class in Literature and Science, provided that he shall have reached such a standard of merit as is satisfactory to the Board.

6. The Scholarship shall be of the value of £200 per annum, and be tenable for four years; but should it appear to the Board of Public Examiners that an additional period is necessary or desirable for the more satisfactory completion of the course of professional study which the holder may have chosen, the Scholarship may be held for one year additional, and no longer.

7. The holder of the Scholarship shall within a reasonable time proceed to some European University, approved by the Board, for the purpose of taking a degree; or shall pursue his professional studies under such persons and in such place as he may select, subject to the approval of the Board; and shall satisfy the President of the Board annually, and from time to time as required, that he is actually a Student of such University, or that he is actually pursuing the study of the profession selected by him.

8. The Scholarship shall not be held in addition to any other Scholarship, or Studentship, or Bursary, at the disposal of the Board.

9. The Competition for the Scholarship shall, if possible, be so arranged by the Board as to take place in the interval when no Porter Studentship is vacant.

10. Should the capital yield interest exceeding £200 per annum, or should the Scholarship not be awarded by reason of the absence of a qualified Competitor, the surplus interest and the amount of the unappropriated Scholarship shall be at the disposal of the Board, for the encouragement and advancement of the education of young men born within the Colony, and being the sons of parents domiciled in the Colony, to be applied in such a manner and under such conditions as may from time to time be laid down by the Board of Public Examiners, with the consent of the donor during her lifetime.

11. It shall be competent for the Board of Public Examiners, with the consent of the donor, during her lifetime, to revise from time to time, and if necessary to annul, all or any of the foregoing arrangements and conditions, and in lieu thereof to substitute such other arrangements and conditions as may be thought desirable, for the encouragement and advancement of the education of young men born in the Cape Colony.

12. Any change which after the decease of the donor may be necessary or desirable in the conditions under which Mrs. Jamison's Scholarship is to be awarded, or under which the surplus interest and other accumulated moneys are to be appropriated, may be made from time to time by the Board at its sole discretion, provided that the advancement of the education of young persons born in the Colony, and of parents domiciled in the Colony, be always and strictly kept in view.

13. The first competition for Mrs. Jamison's Scholarship shall take place at the Annual Session of the Board in June, 1874.

LANGHAM DALE, President.



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The Committee appointed to consider and report upon certain recommendations with reference to the Regulation as to the procedure to be adopted in cases where, owing to the unusual difficulty of some paper, the number of failures is found to be considerably in excess of the average, submitted the following recommendation. That in the Regulation in question, which reads as follows.

"Should the total number of failures in any examination exceed 50% of the total number of candidates examined and should the percentage of failures exceed by about (25%) the average percentage of the three previous years, and should the Vice-Chancellor be of opinion that this excess may be due to the unusual difficulty of any particular paper, he shall be empowered to refer the matter to a special committee consisting of the examiner and the moderator of the paper concerned, the chairman of the committee concerned, the Registrar, and the Vice-Chancellor and three members of the Committee of Studies to be selected by him, and this special committee, if it shall find that the paper in question has been of unusual difficulty, shall have power to authorise such proportional increase in the number of marks assigned to the candidates for that paper as will reduce the percentage of failures as near as possible to the aforesaid average."

the words "such reduction of the minimum for a pass in that paper"

should be substituted for the words "such proportional increase in the number of marks assigned to the candidates for that paper".

The Report was adopted.

Report of the
Committee
on the marking
of the History
paper at the
Intermediate
Examination.

The Committee appointed to enquire into the marking of the History paper at the Intermediate Examination reported that it had examined the marks assigned to candidates at that Examination for the years 1903, 1904, 1905 and 1906 and was of opinion that no alteration is necessary in the maximum number of marks allowed for History. It was resolved that the whole question of the marks assigned to the papers in the Intermediate Examination be referred to the Committee with the following additional members, Professor Logeman, Professor Morrison, Professor Ritchie, Mr Fremantle. The following statistical table placed before the Committee was submitted for the information of the Council.

	English.	Greek.	History.	Dutch.	French.	German.	Mathematics	Dynamics.	Physics.	Chemistry.	Botany.	Zoology.	Geology.	
	300	300	200	250	250	250	250	250	250	250	250	250	250	
1906	-	75	41	154	40	50	73	24	19	24	11	6	4	No. of Candidates.
Comp. Opt.	-	99	103	143	111	101	94	84	69	104	93	104	94	Average.
	235	-	-	-	-	-	-	-	128	53	45	2	4	No. of Candidates.
	127	-	-	-	-	-	-	-	77	118	106	137	108	Average.
1905	-	60	40	135	38	36	60	21	16	12	4	6	3	No. of Candidates.
Comp. Opt.	-	98	84	149	148	128	109	70	109	76	125	92	126	Average.
	204	-	-	-	-	-	-	-	99	59	42	1	3	No. of Candidates.
	128	-	-	-	-	-	-	-	94	111	116	103	121	Average.

	English.	Greek.	History.	Dutch.	French.	German.	Mathematics	Dynamics.	Physics.	Chemistry.	Botany.	Zoology.	Geology.	
	300	300	200	350	250	250	250	250	250	250	250	250	250	
1904	-	45	36	93	21	37	47	9	8	8	8	6	2	No. of Candidates.
Comp. Opt.	143	90	65	155	127	101	76	93	109	99	52	20	106	Average.
	132	-	-	-	-	-	-	-	79	36	26	1	-	No. of Candidates.
	-	-	-	-	-	-	-	-	105	122	125	133	-	Average.
1903	-	47	42	94	29	36	70	13	12	13	6	5	-	No. of Candidates.
Comp. Opt.	145	100	94	147	135	132	102	57	45	27	62	43	-	Average.
	177	-	-	-	-	-	-	-	27	22	27	2	1	No. of Candidates.
	-	-	-	-	-	-	-	-	95	112	20	32	131	Average.

Comp. - Compulsory.

Opt. - Optional.

The Report of
The Scholar-
ships Com-
mittee on
the Regu-
lations for
the award
of the Wor-
cester Collge
(Oxford)
Exhibition.

The Scholarships Committee submitted a report on the Regulations for the award of the Worcester College (Oxford) Exhibition and on its recommendation the following Regulations were adopted:

1. This Exhibition is of the value of £30 per annum and is tenable for two years at Worcester College, Oxford.
2. The Exhibition when vacant will be awarded on the results of the B.A. Honours Examination immediately preceding the award and, ceteris paribus, candidates from the South African College will have preference.
3. The Exhibition cannot be held with a Rhodes Scholarship, but may be held with any Scholarship at the disposal of the University Council.

As the first vacancy for the Exhibition will be for residence in October next it was decided that applications be at once invited from all the eligible Graduates of 1906 and that the award be made by the Vice-Chancellor's Committee.

Report of
the Exam-
iners Selection
Committee.

The following Report of the Examiners Selection Committee was submitted:

The Committee reports as follows:

- (1) That it has made the following appointments in place of examiners unable to act:
 - (a) Mr. W.T. Saxton, B.A., as examiner in Botany at the Matriculation Examination in place of Professor Pearson.
 - (b) Mr. E.T. Littlewood, M.A., B.Sc., as examiner in Dynamics at the Intermediate and First Mining Examinations in place of Mr. Hough.
 - (c) Professor Crawford, M.A., D.Sc., as examiner in Mathematics III at the B.A. Honours Examination in place of Mr. Hough.

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- (d) Professor R.B.Young, M.A., B.Sc., as examiner in Geology in place of Mr. Rogers.
- (e) Mr. Advocate Tindall, B.A., LL.B., as an examiner for the Law Certificate and Civil Service Lower Law Examinations in place of Mr. Advocate Smuts.
- (f) Mr. J.F.W.Kupferburger, B.A., B.Sc., as examiner in Trigonometry and Mensuration for the Survey Examination in place of Mr. Rendell.
- (g) Mr. A.E.Hodgson, F.R.A.S., as examiner in Astronomy and Spherical Trigonometry for the Survey Examination in place of Mr. Rendell.
- (h) Mr. J.Sutherland, M.A., as Moderator in Algebra for the Survey Examination in place of Mr. Rendell.
- (2) That it has considered the case of an examiner who has prepared papers but is unable to examine the candidates' answers and recommends:

That such an examiner receive a fee of £1 for each paper, the balance of the full fee for the paper to be paid to the examiner appointed to take over his work, and that, for the purpose of the three years' rule, the examiner who prepared the papers be reckoned as the examiner for the year.

The first of these recommendations was adopted as printed. The second was adopted with the substitution of the words "half the fee" in place of "fee of £1".

The following recommendations of the same Committee with regard to the appointment of Examiners and Moderators for the Second and Final Mining Examinations were confirmed:

SECOND MINING EXAMINATION.

	<u>Examiner.</u>	<u>Moderator.</u>
Mining	{ Mr. H.Weldon Mr. A.E.Payne
Mechanical and Electrical Engineering	{ Mr. J.A.Vaughan Mr. E.Goffe
Mechanical Drawing	Professor Payne (S.A.College)
Mine Surveying	Mr. R.Pizzighelli	<i>Mr Melville.</i>
Chairman:	Mr. J.Harry Johns.	

FINAL MINING EXAMINATION.

Principles of Mining	Professor Yates (T.U.College)	Mr. A.E.Payne
Economics of Mining	Mr. A.E.Payne	Professor Yates.
Mechanical Engineering	{ Mr. David Gilmour Professor Payne

Electrical Engineering	Mr. L. Wilms	Professor Bohle. (S.A. College)
Treatment of Minerals	(Mr. S.H. Pearce Mr. E.H. Johnson)
Assaying	Professor Hahn (S.A. College)	Prof. van der Riet (Victoria College)
Mine Surveying	Mr. R. Pizzighelli	Mr. McNeill
Chairman: Mr. J. Harry Johns.		

Report of
the Law
Committee

The Law Committee submitted a report which was adopted in the following form:

The Committee reports that it has considered

- (1) A letter from the Assistant Law Lecturer of the Transvaal University College with reference to the Text Books for the Law Examinations.
- (2) Extracts from the Reports of the Examiners in Law for 1906.
- (3) An enquiry as to whether O.R.C. candidates for the Final LL.B. Certificate may be allowed to substitute the O.R.C. Bills of Exchange for Act for the Cape Acts on that subject.

and submits the following recommendations to come into force in 1908:-

(A) Preliminary LL.B. Examination.

English Law:

That Pollock on Contracts and Pollock on Torts be substituted for Broom's Commentaries on Common Law.

with the leading cases therein contained

(B) Final LL.B. Examination.

(1) Statute Law:

That "1 of 1854" be omitted, and that Acts 7 and 23 of 1905 be included.

(2) English Law - Special Subject:

That no change be made, as the O.R.C. Bills of Exchange Act is substantially the same as the Cape Acts on that subject.

(C) Law Certificate and Civil Service Lower Law Examinations.

(1) English Law:

(a) That Anson on Contracts and Fraser on Torts be substituted for Undermaur's Principles of Common Law.

(b) That Book III as well as Book IV of Harris's Principles of the Criminal Law be omitted.

(2) Roman-Dutch Law:

(a) That the study of Van der Linden be restricted to the following parts: Books I, II, III (Chapters 1-7), and Book IV (Chapter I.).

(3) Statute Law:

(a) That the following Acts be added to the list of prescribed Statutes:-

15, 1856; 16, 1873; 7, 1875; 30, 1889; (Masters and servants). Act 7 of 1905 (Stock thefts). Act 23 of 1905 (Insolvency).

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(b) That the following Acts be omitted from the list:

The Juvenile Offenders' Acts (7, 1878; 8, 1888; 4, 1892; 58, 1895).

With regard to that portion of the Regulations for the Law Certificate Examination and for the Civil Service Lower Law Examination referring to the Examination in Roman-Dutch Law it was resolved that the Law Committee be instructed to draw up a list of decided cases to take the place of the following paragraph in these Regulations

Candidates are recommended to read Supreme Court Reports of cases bearing upon points of law and practice dealt with by the author.

The Law Committee was further instructed to consider the whole matter of the Syllabuses for the Law Examinations with a view to recasting them, having special regard in so doing to the introduction of the subject of Constitutional Law.

The following report of the Mining Committee was submitted:

A. FIRST MINING EXAMINATION: OLD SCHEME.

With reference to the candidates who failed at the First Mining Examination (Old Scheme) held for the last time in 1906, the Committee reports that it decided as follows:

- (1) That the two candidates who failed in the examination as a whole be allowed to take the Second Mining Examination (New Scheme) on the understanding that if they pass that examination they will be held to have passed the First and Second Examinations under that scheme.
- (2) That the two candidates who passed in all the subjects except Chemistry be required to take the Chemistry Examination of the Second Examination under the new scheme.
- (3) That the two candidates who passed in all the subjects except Dynamics be given a special paper on the old syllabus.

B. FIRST AND SECOND MINING EXAMINATIONS: NEW SCHEME.

Recommendations submitted by the Committee:

- I. That the items gaseous and liquid fuels, commonly used explosives, and lubricants be deleted from the Chemistry syllabus for the Second Examination. (Calendar p. 239, Section (d)).
- II. That the recommendation of the Board of Studies of the Transvaal University College that the standard for a pass at the First and Second Examinations be raised be not adopted, the Committee being of opinion that no action should be taken in the matter in view of the fact that the new regulations for the First Examination have

Report of
the Mining
Committee

been in force for one year only and that those for the Second Examination will come into force this year for the first time.

III. That the last paragraph of Section 9 (Calendar P. 242) of the syllabus in Engineering Design and Drawing for the Second Examination be amended so as to read as follows:

Drawings on the work covered by the Syllabus must be submitted by each candidate at the Examination (half to be inked in and generally finished, the remainder to be in pencil) the size to be at least equivalent to twelve half-imperial sheets. The drawings must be certified to be the candidate's own work.

0. THIRD AND FINAL MINING EXAMINATIONS: NEW SCHEME.

Recommendations submitted by the Committee:

I. That the subjects, syllabuses, and marks and standards for the Third and Final Examinations be as follows:

(See pages) *See inset.*

II. That in connection with the Third and Fourth Examinations, the teachers of each subject be joint examiners with an external examiner in that subject.

D. REGULATIONS FOR THE DEGREE OF B.SC. IN MINING ENGINEERING.

Recommendation standing over from last report:

That the Diploma in Mining Engineering be discontinued and that all candidates who pass the Four Mining Examinations receive the degree of B.Sc. in Mining Engineering.

Paragraphs A, B, & C, were adopted as printed. Paragraph D was referred back to the Committee for reconsideration.

The following Report of the Building Committee was submitted and adopted with the omission of the words bracketed in paragraph XI " with a view to proceeding with the work."

FIRST PORTION OF BUILDINGS.

I. The Committee begs to report that the portion of the University Buildings now under construction is expected to be ready to be taken over from the contractor by the beginning of June and that steps are being taken to provide the necessary furnishings for the Council Chamber, committee Rooms, Library and offices so that occupation may be taken by the beginning of July.

Report of the Building Committee.

THIRD MINING EXAMINATION.

SUBJECTS AND SYLLABUSES.

A. GEOLOGY.

(1) Written Examination:

(a) Historical Geology.

The Geology of South Africa and its relation to that of other regions.

(b) Economic Geology.

Economic aspects of geological structure, ore deposits, coals, petroleum and natural gas, building stones, clays, soils, underground water.

(2) Practical Examination:

Identification of common European and South African fossils. Drawing of sections from maps published by the Geological Surveys of South Africa.

B. PRINCIPLES OF MINING.

(1) Written Examination:

(a) Mode of Occurrence of Minerals, etc.:-

Veins, beds, masses; Schmidt's law and Zimmerman's rule; rich parts of veins, influence of encasing rock, etc., origin of deposits, theories of formation, alteration of deposits; formation and nature of Gezzans; examples of deposits.

(b) Prospecting:-

Old workings and records; geological evidence; surface indications, mineralogical indications, magnetic indications; methods of discovering and seeking deposits and the ascertaining of their nature and extent.

(c) Boring:-

Use of bore-holes, various methods of boring; accidents to appliances and methods of dealing with same; deviations in bore-holes, methods of surveying bore-holes, Marriott's and other instruments for the surveying of bore-holes.

(d) Breaking Ground:-

Tools for excavating by manual labour; explosives and blasting; mis-fires; machines used for excavating; transmission of power from surface to underground workings; mechanical diggers; dredges; rock drills; grove cutters; tunnelling machines; shaft sinking machines; machine versus hand drilling; drill sharpeners; methods of excavating by (a) direct application of heat, (b) by solution, and (c) by hydraulicing; sinking, rising and driving; application of processes in different mineral deposits; the opening up of deep level mines.

(e) Supporting Excavations:-

Kinds of timber used, dry rot and its Prevention; manner of timbering shafts, levels and working places; brickwork, masonry and concrete supports; dry walling; iron and steel supports of various kinds; their combination with timber, masonry and concrete; making and supporting excavations in running, watery or loose ground; "spilling," "piling"; Haase, Triger, Poetsch, Kind Chaudron, Gobert method, etc.

(f) Exploitation:-

Open workings; quarrying; dredging; hydraulic; extraction by solution; underground working of tabular and lenticular deposits; influence of the nature of the deposit and containing walls; working mass deposits; the laying out of properties; considerations determining the position of the shafts; number, form and dimensions of the shafts; shaft pillars; size, direction and position of drives and winzes; special methods of working in connection with deep level mines.

(g) Haulage or Transport:-

Miscellaneous methods; semi-portable engines; stationary engines; self-acting inclines; different systems of haulage; steam, compressed air, electric and other locomotives; safety appliances, aerial ropeways; mono-rail system; loading and unloading railway trucks and ships.

2) Practical Examination:

A viva-voce examination will be held ~~underground~~, the candidates being asked questions of a practical nature, dealing with occurrence of minerals, prospecting, boring, breaking ground, supporting excavations, exploitation and haulage.

They may also be called upon to give a practical demonstration of drilling (hand and machine), timbering, track laying etc.

C. SURVEYING.

(1) Written Examination:

Definition and general principles. The mode of occurrence and propagation of errors.

Instruments and methods used in the measurement of lengths, angles and areas.

Traversing with the chain, compass, prismatic compass, theodolite and other instruments, and the adjustment of traverse surveys.

Triangulation and the various methods of adjustment of triangulation surveys.

Permanently recording survey data by various means.

Limits of accuracy required in different classes of work.

Calculation of areas.

The dumpy and Y levels, and their use in differential, profile levelling, and in contouring.

Setting out surface works.

(2) Practical Examination:

Traversing (a) by pacing, (b) with chain, (c) with theodolite.

Triangulation (a) with compass, (b) with theodolite.

Contour survey.

Setting out surface works.

D. METALLURGY AND ASSAYING.

(1) Written Examination:

(a) General Metallurgy. Materials and products of metallurgical

Processes:-

Metals, their properties and the influence of impurities. Alloys (treated in a more comprehensive manner than in the Second Mining Examination). Thermal treatment of metals. Microstructure of metals. Fuels; composition, preparation and general characters; calorific power, pyrometry. Fire-resisting materials.

Ores, fluxes and slags; calculation of furnace charges.

Metallurgical processes and operations:-

Preliminary processes; ore-dressing; calcination and roasting.

Extraction processes proper (a) carried out at high temperatures, (b) at ordinary temperatures.

Appliances used:-

Furnaces: classification, furnace types, details of construction and accessories; furnace operations, supply of air to furnaces, methods of heating air supply.

Appliances employed in wet processes, as in leaching and electrolytic methods.

(b) Special Metallurgy.

Manufacture of Iron and Steel.

Extraction of Gold by concentration and amalgamation.

Practical Examination:

Exercises on the following:-

Examination of fuel, determination of coke, ash, etc.

Examination of refractory materials, fire-clay, etc.,

effect of impurities.

Alloys, formation and Properties; amalgams.

Oxidation, formation of oxides, calcination, cupellation.

Slags and silicates, fluxes, scorification.

Sulphides, formation.

Reduction of oxides by carbon, sulphides by iron, and by reaction of sulphides with oxides and ~~salts~~ sulphates.

Liquation.

Electro-deposition and refining.

Metals, examination of properties and effect of impurities.

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E. ENGINEERING.

Written Examination:

(a) Materials of Engineering.-

Timber, masonry, bricks, cement, concrete, iron, steel and other metals, etc., particularly with regard to their uses in engineering.

(b) Workshop Practice.-

Consideration of the various workshop methods and processes. The various hand and machine tools used for wood and iron.

(c) Theory of Machines and Mechanism.-

Kinematic classification of mechanisms. Analysis of various mechanisms. Diagrams of displacement, velocity and acceleration. Rolling motion. Screw motion. Mechanisms involving non-rigid links. Levers. Cams. Linkwork. Straight line and parallel motions. Intermittent linkwork. Intermittent motion. Wheel trains and mechanisms containing them. ~~Mechanical combinations.~~ *and in connection with* Construction of gear teeth.

(d) Force, Work, Energy and the Mechanical transmission of Power.-

Graphic representation of forces and work done. Moments. Principle of work and its applications. Work done under various circumstances. Friction, lubrication and lubricants. Efficiency of machines. Kinetic and potential energy. Energy of rotation. Centrifugal force. Details of the various systems of transmitting and distributing power. Mechanical haulage. Mechanical conveyance of material.

(e) Prime Movers.-

Sources of energy in nature and its utilisation. Wind and water power. Steam and internal combustion engines. The steam engine. First and Second Laws of Thermodynamics.

Properties of steam. Carnot and Rankine cycles. Details of the modern steam engine, including the locomotive and steam turbine. Behaviour of steam in the cylinder. The steam jacket. Compounding. Superheating. Determination of I.H.P. Analysis of the indicator diagram. Steam consumption.

(f) Steam Boilers:-

The combustion of fuel in boilers. Calorific power and intensity. Evaporative power. Various types of boilers. Boiler fittings. The working of steam boilers.

(g) Dynamics of Machinery:-

Dynamics of the steam engine, internal combustion engine, and pumps. Crank effort diagrams. Effects of inertia and weight. Fluctuation of energy and speed. Flywheels and governors. Mechanisms in motion. Balancing of engines and machinery.

(h) Elementary Strength and Elasticity of Materials:-

Graphical determination. Stress and strain. Resilience. Strength of parts in tension. Effect of centrifugal force and of temperature. Nature of shear stress and strength of parts subjected to shear such as shafts, riveted joints and spiral springs. Stiffness of shafts. Columns and long struts. Proof and application of formula $\frac{D}{Y} = \frac{E}{R} = \frac{H}{I}$.

combined bending and torsion. Bending moments and shearing forces. Economical distribution of material. Built-up girders. Consideration of the methods of testing for tension, compression, bending and torsion, with details of the auxiliary measuring and recording apparatus. Effects of repetition of stress. Nature of the tests applied to the materials of engineering and their behaviour under test, Testing wire, wire ropes, chains, structural members, stone, bricks, cement and timber.

3) Practical Examination:

The use of hand and machine tools for wood and metals. Preparation of test specimens. Testing of materials used in engineering. Determination of I.H.P. and B.H.P. of steam engines. Efficiency tests of boilers. Efficiency of machines. Each candidate will also be subjected to a viva-voce examination.

ENGINEERING DESIGN AND DRAWING. (One paper which may be set in two parts. Time - four to six hours.)

Design and drawing of details of mining machinery and plant, including simple structures in timber, iron and steel, and masonry.

Drawings on the work covered by the syllabus must be submitted by each candidate at the examination, (half to be inked in and generally finished, the remainder to be in pencil), the size to be at least equivalent to twelve half-imperial sheets. The drawings must be certified to be the candidate's own work.

ELECTROTECHNICS.

1) Written Examination:

(a) Electrical Potential Current and Resistance.-

Insulation and laying of cables; specific resistance and temperature changes; standards of resistance and E.M.F.; testing room instruments and measurements; testing sets, measurement of conductivity, insulation and capacity.

(b) Electromagnetism and Magnetic Circuit:-

Magnetomotive force and reluctance; calculation of ampere turns required. Faraday's and Henry's experiments on electromagnetic induction; Lenz's law and Fleming's rule; conversion of mechanical into electric energy.

(c) Direct Reading Instruments for Continuous Currents:-

Classification; details of construction of standard types of ammeters, voltmeters, wattmeters and electricity meters

(d) Direct Current Dynamos and Motors:-

Simple loop rotating in a magnetic field; commutator and sparkless commutation; development of the dynamo; types of field magnets and armatures; details of construction; armature reaction; characteristic curves; efficiency and methods of testing; analysis of losses; automatic regulation; simple theory of the motor; counter E.M.F.; efficiency of motor and testing; mechanical characteristics.

(e) Secondary Cells:-

Experiments of Plante; Faure's cell; chemical theories; description of modern types; charge and discharge; effects of rest; resistance, capacity and efficiency.

(f) Electric Lamps and Photometry:-

Arc lamps. Mechanism of modern types of arc lamps. Incandescent lamps. Principles of photometry. Units of luminous intensity, flux, illumination and brightness. Methods of determination.

(g) Principles of alternating currents and alternating current Instruments:-

General principles of alternating currents. Effects produced by inductance and capacity. Measurement of power. Power factor. Principles of synchronous and asynchronous machines and of the transformer.

(h) Direct Reading Instruments for Alternating Currents:-

Electrostatic voltmeters. Hot wire instruments. Induction instruments. Instruments for measuring power in polyphase circuits. Frequency tellers.

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(A) Practical Examination:

Each candidate will be subjected to a viva-voce examination on questions of a practical nature, and will be required to carry out practical tests on any of the subjects included under the heading of the written examination.

MARKS AND STANDARDS.

<u>Subjects.</u>	<u>Marks.</u>	
	Maximum.	Minimum required.
Geology	(Paper 200 (Practical 100)	60 30
Metallurgy and Assaying	(Paper 200 (Practical 150)	60 45
Principles of Mining	(First paper, 200) (Second paper, 200) (Practical 150)	120 75
Surveying	(Paper 200 (Practical 100)	60 50
Engineering	(First paper, 200) (Second paper, 200) (Practical 150)	120 45
Engineering Design and Drawing	(Paper 150 (Drawings 200)	45 100
Electrotechnics	(Paper 300 (Practical 150)	90 45
Total	2850	1140

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FINAL MINING EXAMINATION.

Subjects and Syllabuses.

A. PRINCIPLES OF MINING AND MINING ECONOMICS.

Written Examination:

First Paper: Principles of Mining.

(a) As for the Third Mining Examination, and in addition:

(b) Hoisting and Winding.-

The various systems of hoisting, including:-

Craven, Morgan, Blanchett's Pneumatic, Hopwood and Marshall, Koepe, Cock, Whiting, and Tomson.

The different types of engines, drums, reels, sheaves, and ropes; hoisting in vertical shafts and inclines; brakes; general arrangement of winding engines; depth indicators; stage winding; skips; cages, and buckets; guides; counter-balancing; taper rope; flat rope; conical and spiral drums; tail ropes beneath cages; Meinicke system; overbalancing; winding from great depths; electric hoists; prevention of overwinding; safety devices; signalling; head gears; underground hoisting and machinery; arrangements for sinking; loading and unloading arrangements.

(c) Drainage.-

Sources of influx; the excluding of surface water; reservoirs and dams; drainage tunnels; syphon; hoisting water; pumps; engines above and below ground; gas and oil motors for pumps; Pohle pump; hydraulic jet; counter balances and safety-catches for rods; special pumps; etc.; precautions to be taken with corrosive water.

(d) Ventilation.-

Composition of air; causes of the pollution of the air of mines; the detection and estimation of the impurities; natural ventilation, artificial ventilation; furnace; various

mechanical ventilators; quantity and pressure of air and the power required; distribution of the air; friction of air currents; "splitting" of the air; measuring and recording the volume and pressure of the air; anemometers; water gauges; quantity of air needed.

(e) Lighting.-

Candles, lamps, with various illuminating materials, the various types of safety lamps; electric lamps, acetylene lamps, Wells' lamps; arrangements for dealing with fires, both underground and surface.

(f) Descent and Ascent.-

Ladders, buckets, cages, and skips.

~~Second Part~~ B. Mining Economics.

(a) Labour.-

Diversities of nationality; cost of skilled and unskilled labour; labour-saving appliances; arrangement and supervision of labour; health of workmen, diseases associated with mining work; condition of workmen, clothing, housing, etc.; accidents in mines, death rate, relative mortality rates in different trades; classification of accidents; miscellaneous accidents underground.

(b) Sampling and Ore Valuation.-

Methods, precautions to be taken, calculations, case of shoots, courses of ore, bunches, dykes, faults, etc.

(c) Mine Accounts.-

Engagement and payment of workmen; conditions of service; payment according to time worked, work done, value of material got. Books and forms connected with engagement and payment of workmen, with the purchase and distribution of stores, and

with sales of product; work analyses and summaries; Head Office books, balance-sheet.

(d) Legislation.-

Main provisions of South African Mining Laws and Regulations.

(e) General.-

Considerations affecting the value of mineral deposits and choice of methods and machinery. Influence of nature and size of deposit, and situation of mines.

(f) Mine Examination and Reports.-

The preparation of reports and the examination of mining properties.

(g) Mineral Statistics.-

The quantities of minerals obtained in various parts of the world.

C. ORE DRESSING.

(a) Hand Sorting.-

Spalling and cobbing; picking; stationary tables; rotating tables; inclined shoots; shaking tables and travelling belts.

(b) Comminution and Agglomeration.-

Natural weathering; rock breakers; rolls, stamps, and other crushing machines; coal breakers; disintegrators; briquetting machines, etc., etc.

(c) Sizing.-

Sieving; screens of various types; principles and practice of hydraulic sizing.

(d) Hydraulic Concentration.-

Principles; keeves; jigs; rising current appliances; coal washers; tables; vanners; belts; buddles, frames, blankets, etc.

- (e) Magnetic Separation.
- (f) Pneumatic Concentration.
- (g) Concentration by the use of oil and grease.
- (h) Special methods of separation.

The designing and erection of dressing plants and application of processes and appliances to particular cases such as coal washing, cleaning iron ores, dressing of lead, copper and zinc ores, tin stamping, gold milling, concentrating silver ores, gem washing, etc.

D. SURVEYING.

) Written Examination:

- Theory and adjustment of instruments.
- Measurement of volumes.
- Surveying with the plane table, tachometer and other distance measures.
- The two and three point problems.
- Problems in triangulation work.
- Problems involving an assumed base.
- Underground surveying with problems.
- Slope measurement under various circumstances.
- Setting out surface and underground work, railway curves and shafts.
- Subdivision of land; supplying omissions.
- Elements of Spherical Trigonometry.
- Determination of time, differences of longitude, latitude and azimuth by means of stellar and solar observations.

(2) Practical Examination:

The practical examination will consist of a trial survey which may be set so as to bring out the undermentioned points:-

Traversing. Triangulation. Contour survey. Setting out surface works. Measurement of volumes of (a) borrow pit, (b) dump. Minor triangulation covering extensive area. Surveying with tachometer and plane table. Underground surveying. Determination of meridian and azimuth, time and latitude, time and longitude, from solar and stellar observations with the engineer's transit.

E. METALLURGY AND ASSAYING.

1) Written Examination:

(a) Metallurgy.

Metallurgy of gold, silver, lead, copper, tin, zinc, mercury, cobalt, nickel and bismuth.

(b) Assaying and Metallurgical Analysis.

Objects of assaying, methods of assaying, sampling. Dry assaying, materials, apparatus and operations. Dry assaying of ores of gold, silver, lead, copper, mercury and tin, and of gold and silver bullion. Wet assaying of silver, copper, lead, iron and zinc, including special rapid methods in use in works.

Complete analysis of metallurgical materials and products such as iron, steel and other commercial metals, ores, slags, fuels and so on.

Cyanide and chlorination and similar tests on gold and other ores will also be dealt with under this head, with the examination of the cyanide and other working solutions employed.

F. ENGINEERING.

1) Written Examination:

(a) Steam Engines and Boiler Plants.-

Thermodynamics of the perfect heat engine and application to the steam engine. Influences tending to reduce efficiency. Details of complete tests of engines and boilers, with apparatus required, observations to be made, and heat balances.

Efficiency of plant. Methods adopted to increase efficiency. The theory and practical applications of compounding steam jacketing and superheating. Steam-engine performance. Size of engines for given power. The economical combustion of fuel and prevention of smoke. Mechanical stoking. Burning, gaseous, liquid, and powdered fuels. Steam generation by refuse destructors. Natural and artificial draught. Lubrication. Consideration of the various condensing and cooling arrangements, feed-water heaters, filters, purifiers, and pumps, steam separators and traps, reducing valves, speed and pressure recorders, automatic dumpers, coal handling appliances, and all the other auxiliary appliances to be found in a modern well-equipped power plant.

Practical Examination:

The Practical Examination will be such as would naturally arise out of the syllabus for the written examination.

(b) Internal Combustion Engines.-

Theory and principles governing the action of internal combustion engines. Cycles of operation. Modern types of gas engines. Ignition, governing and starting arrangements. Gas producer plants. Heavy oil and spirit engines. Vaporisers and carburetters. Diesel engine. Power and efficiency of internal combustion engines.

^d
(c) Elementary hydraulics and hydraulic machinery.-

General Properties of fluids. Flow of water in pipes and channels, and through variously shaped orifices. Bernoulli's theorem. Measurement of flowing water by weir gauges and meters. Reaction of jets. Impulse of liquids on surfaces. Theory and details of the various types of impulse and pressure turbines. Water wheels. Water pressure engines. Hydraulic transmission of energy. Hydraulic accumulators, cranes and lifts. Hydraulic machine tools. Pumps.

^c
(d) Compressed Air.-

Theory of compression and expansion, isothermally, adiabatically and partially cooled. Single stage and compound compressors. The air motor. Efficiency of combined compressor and motor under various conditions of compression and working, and conditions most favourable to economy. Transmission losses. Reheating. Calculation of size of compressor for given power. The dense air system. Fans, pneumatic machines and tools. Testing efficiency of compressed air plant. Calculations in connection with compressed air.

(e) Pumps and Pumping Machinery.-

Consideration in detail of the various methods of pumping water. Types of pumping engines for mines, waterworks, wells, etc. Direct acting and rotative pumps, steam and hydraulic

systems. Single and multiple stage centrifugal pumps. Pumping by compressed air. Air lift pumps, displacement pumps, and mechanically-operated pumps. Efficiency of the various systems of pumping. Calculations connected with pumping.

(f) The Mechanics of Hoisting Machinery.-

Winding from vertical and inclined shafts by steam, compressed air, hydraulic and other systems. Details of drums, brakes, reversing gears, head-gears, etc. Haulage on levels and inclines. Winding and mechanical haulage calculations. Deep level winding. Ropes and the stresses to which they are subjected.

(g) Power Plants.-

Horse power required for the various purposes about mines. Types of engines and boilers and considerations governing their selection. Auxiliary machinery for complete equipment. Arrangement of plant. The working, evaporative power and failure of boilers. Care, management and depreciation of plant. Testing for efficiency the engines, boilers, hauling, pumping and other plant. Comparison of the various systems of transmitting and distributing power. Machinery regulations of the various South African Colonies.

2) Practical Examination:

~~The work of the third year and in addition:-~~

Experiments on flow of water. Efficiencies of water turbine, centrifugal, and reciprocating pumps. ^{Boiler tests.} Complete tests of the steam engine, gas and oil engine, petrol motor, pumps, air compressor and pneumatic machine. Each candidate will also be subjected to a viva-voce examination.

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ELECTROTECHNICS.

1) Written Examination:

(a) Alternating Current Machines:-

Rotating armature. Rotating field. Inductor types. Principles of induction motors. Measurement of power in polyphase circuits. Parallel running of alternators and methods of synchronising. Voltage relationships in two and three-phase systems.

(b) Electrical Distribution:-

Methods of distribution of current. Relative advantages of the different systems. Economical considerations of distribution. Laying of overhead and underground lines. Testing for capacity and insulation.

(c) Auxiliary Apparatus:-

Switch gear, switch-boards and fittings for high and low tension gear. Regulating and safety appliances. Lightning arresters. Insulators. Testing for insulation and resistance.

(d) Electric Traction:-

Dynamics of traction. Acceleration and retardation of cars. Details of systems for conveying energy to the cars.

Overhead, third rail conduit and surface contact systems.
Bonding. Car equipment. Types of traction motors. Con-
trolling arrangements. Series, series-parallel and parallel
running. Accumulator traction. Alternating current railways.
Brakes.

^e
(8) Electrotechnics applied to Mining.-

Installations of electric bells and telephones for mines.
Dangers of electricity and methods of obviating them. Electric-
ally driven fans. Detailed comparison of electricity with
other modes of transmission of power for mining. Installation
of mine and shaft cables, junction boxes. Conditions ^a affect-
ing choice ^{of} systems of electrical distribution, continuous versus
polyphase currents, voltage and frequency. Choice of motors
for electrical pumping plants for mines and commercial efficiency.
Detailed discussion of electric haulage by electric motors and
electric locomotives. Driving of stamp batteries and the
effect on the central station. Dynamical investigations of
electric hoisting. Systems of electric winding plants including
the three-phase system and Ligner system. Electrical equip-
ment of isolated mines and of a group of mines. Economic as-
pects of the centralisation of power for a number of mines.
Detailed description of the more recently installed electric
plants on mines. Discussion of recent papers on the application
of electricity to mining operations.

9) Practical Examination:

Candidates will be required to carry out tests to prove
their practical acquaintance with the subjects of the written
examination. Each candidate will also be subjected to a viva-
voce examination.

MARKS AND STANDARDS.

<u>Subjects.</u>	<u>Marks.</u>	
	Maximum.	Minimum required.
Metallurgy and Assaying	(Paper 200)	60
	(Practical 150)	45
Principles of Mining	(Paper 200)	60
Mining Economics	200	60
Ore Dressing	200	60
Surveying	(Paper 200)	60
	(Trial Survey 300)	150
Engineering	(First paper, 200)	120
	(Second paper, 200)	
	(Practical 150)	45
Electrotechnics	(Paper 300)	90
	(Practical 150)	45
	<u>Total</u>	<u>2450</u>
		<u>980</u>

(b) Internal Combustion Engines.-

Theory and principles governing the action of internal combustion engines. Cycles of operation. Modern types of gas engines. Ignition, governing and starting arrangements. Gas Producer plants. Heavy oil and spirit engines. Vaporisers and carburetters. Diesel engine. Power and efficiency of internal combustion engines.

^d
(c) Elementary hydraulics and hydraulic machinery.-

General Properties of fluids. Flow of water in pipes and channels, and through variously shaped orifices. Bernoulli's theorem. Measurement of flowing water by weir gauges and meters. Reaction of jets. Impulse of liquids on surfaces. Theory and details of the various types of impulse and pressure turbines. Water wheels. Water pressure engines. Hydraulic transmission of energy. Hydraulic accumulators, cranes and lifts. Hydraulic machine tools. Pumps.

^c
(d) Compressed Air.-

Theory of compression and expansion, isothermally, adiabatically and partially cooled. Single stage and compound compressors. The air motor. Efficiency of combined compressor and motor under various conditions of compression and working, and conditions most favourable to economy. Transmission losses. Reheating. Calculation of size of compressor for given power. The dense air system. Fans, pneumatic machines and tools. Testing efficiency of compressed air plant. Calculations in connection with compressed air.

(e) Pumps and Pumping Machinery.-

Consideration in detail of the various methods of pumping water. Types of pumping engines for mines, waterworks, wells, etc. Direct acting and rotative pumps, steam and hydraulic

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II. With reference to the question of the payment of Municipal rates on the building, the Committee is pleased to be able to report that the City Council has, as the result of representations made to it, intimated that exemption from payment of rates has been granted, pursuant to the provisions of Section 87 of the Cape Town Municipal Act, 1895 (No. 26), the exemption to continue so long as the terms of the Act in question apply and the buildings are utilised exclusively for educational purposes.

III. As the services of a caretaker will be required for the buildings, the Committee desires authority to make such arrangements as it may deem necessary for the appointment of such an officer.

IV. When the contract for the first portion of the buildings was entered into the granite balustrade in Queen Victoria Street was omitted on account of the cost. But as some railing must be erected as soon as the hoarding is removed and as the Committee has ascertained that the balustrade as originally designed can now be put up for about £448 £422 as against £866, the amount specified in the tender of the present contractors, the Committee recommends that it be given authority to have the work carried out forthwith provided that the cost does not exceed £450.

V. As it seems to the Committee most fitting that the buildings should contain some tangible memorial to the late Dr. Hiddingh in recognition of his munificent gifts to the University, permission is requested to make arrangements for the placing of his bust in bas-relief on the wall of the entrance hall.

SECOND PORTION OF BUILDINGS.

VI. The desirability of proceeding with the remaining portion of the buildings as soon as circumstances will admit has forced itself for a considerable time upon the attention of the Committee and the question of providing the necessary funds for this purpose has therefore received due consideration.

VII. The cost of this portion is estimated at not more than about £25,000, and the Committee is glad to be able to report that, through the efforts of the Pro Vice-Chancellor, a sum of £1300 has been received, namely, £500 from Sir Julius Wernher, £500 from Mr. S.B. Joel, and £300 from Mr. Max Michaelis.

VIII. As the Committee felt that the time was not opportune for an appeal to the Government for an out and out grant of a large sum of money, the Honourable the Colonial Secretary was approached with the view of obtaining a Government loan on advantageous terms and, as will be seen from the following letters, with the most satisfactory results.

A. Colonial Secretary's Office,
12th September, 1906.

Sir,
Referring to your letter of the 8th instant, with enclosures, on the subject of the proposed loan of £25,000, in connection with the new University Buildings, I am directed to state that, under the circumstances represented, the Government is prepared to grant a loan for the sum and the object in question under the provisions of the Local Works Loans Act, as soon as the necessary funds can be definitely arranged, and the application has been noted for treatment accordingly.

(Signed) Noel Janisch.

Sir,

B.

13th October, 1906.

In continuation of my letter of the 20th ult., and with reference to your communication of the 8th instant, on the above subject, I am directed to express the Colonial Secretary's regret that, as the Regulations at present stand, no power is given him to pay half the annual charges for interest and redemption of capital on the proposed loan. Provision could however be made by placing a sum upon the Estimates for this purpose next Session, and I am to state that the matter will be considered when these are being framed.

(Signed) Noel Janisch.

C.

24th April, 1907.

In acknowledging the receipt of your letter of the 18th instant, on the above subject, asking whether steps have been taken in the direction of having a sum placed on this year's Estimates of Expenditure for the purpose of defraying half the annual charges for interest and redemption of capital on the proposed loan of £25,000 to the University of the Cape of Good Hope for building purposes, I am directed by the Colonial Secretary to inform you that the necessary provision has been made on the Estimates of Expenditure for 1907-08.

(Signed) H. B. Shaws.

Y IX. The remaining half of the annual charges in connection with the loan would fall to be met from the general fund of the University, but this will be covered partially, if not entirely, by the revenue from the rooms to be let, and by the amount saved in respect of rent for offices, examination halls, storage of examination tables, etc. Further, this charge would disappear entirely as soon as the finances of the country enabled the Government to replace the loan by an out and out grant.

X. Some time may elapse before the Government is in a position to obtain the necessary funds for a loan, but a trust Co. of standing in Cape Town has undertaken to provide such advances as may be required at 5½ per cent. until the Government loan is obtainable. The necessary funds for completing the building are thus available.

XI. The Committee therefore recommends that it be given authority to call for tenders for the remaining portion of the building (with a view to proceeding with the work) as soon as Parliament has made the necessary provision for payment of half the annual charges in terms of the Colonial Secretary's letter of April 24th, 1907.

Correspondence
with reference
to proposed
Inter colonial
Conference
submitted

With reference to the proposed Inter colonial Conference on University Education the following correspondence was submitted.

A.

Registrar to Under Colonial Secretary.

23rd February, 1907.

Sir,

In reply to your letter of the 7th February and to the previous correspondence that has taken place with reference to the appointment of certain representatives of this University as delegates to a conference which it is proposed to hold on the subject of University education, I am directed to inform you that the matter was fully considered by the University Council on Friday, 15th February, when the following resolution was adopted:

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"That a Committee be appointed to draft a reply to the various letters of the Colonial Secretary with reference to University reform and the proposed Conference - pointing out that it is inexpedient to proceed with this matter until the opinion of the new Governments now about to be instituted across the Orange River can be ascertained."

1. In placing before you some of the reasons that induced a majority of the Council to come to the foregoing conclusion it will be convenient to refer briefly to the position in which the matter stands.
2. For years past the question of University reorganisation and of the improvement of the status of University Education in this country has engaged the attention of the University Council.
3. To this end, after much previous consideration, a Committee was appointed in February 1905 which devoted much time and thought to the matter and took every means of eliciting the opinions and views of those interested.
4. The matter was also very fully and ably discussed in the Press.
5. The report of the Committee was considered at special meetings of the Council held on 24th March and 7th April 1906, when it was resolved to refer the matter for further consideration to a special Committee with instructions to formulate definite proposals.
6. It having reached the ears of the Vice-Chancellor, shortly before the meeting of Council at which the report of the special Committee was to be considered, that some proposals for an Intercolonial Conference on the same subject were under discussion, he addressed the Honourable the Colonial Secretary on the 30th of October and on the 2nd of November, the date of the sitting of the University Council, he was favoured with your reply, enclosing a copy of the letter addressed to the High Commissioner of South Africa on the 6th of October by the officials in charge of the Education Departments in the several Colonies who had met at Bloemfontein on the 5th and 6th of that month.
7. The receipt of this letter, and the proposals put forward by the gentlemen who signed it, was the first official intimation afforded this Council of proposals which could not fail to affect it, dealing as they do with matters which, as already stated, had been engaging its own attention for years past.
8. Under the circumstances the Council decided to postpone the consideration of the proposal, while expressing its regret "that a conference should have been held, and that another should be proposed to be held on matters relating to University Education without the Council of this University having been in any way previously consulted or even informed."
9. To this respectful remonstrance which was communicated to you in my letter of November 8th no explanation has been vouchsafed.
10. I am instructed to draw attention most respectfully to the fact that since the letter of the High Commissioner of August 27th, great changes have taken place in the constitution of this University by the accession of the Transvaal and Orange River Colony in terms of the act, so that the Council now forms a federal body representing the interests of Higher Education for the whole of South Africa.

11. It is submitted that this Council is now competent, even if that were not formerly the case, to deal with the questions affecting Higher Education in South Africa which it is proposed to refer to this Conference.
12. The Council does in fact form a conference recognised by the law, and it is composed of precisely the same material as that proposed to be called, the main difference being that the Council is larger than the suggested conference and more representative.
13. The University Council is sensible that some reform is called for, and as a matter of fact a scheme of University reform, drafted after the most laborious and prolonged consideration by the special Committee referred to in section 5 was actually considered by the Council at its meeting in November last and provisionally adopted, and was again more fully considered at the next meeting on 14th February and was adopted subject to final confirmation at the next meeting in May.
14. If it were otherwise, if the University had shown dogged resistance to change or improvement, and if the Government thought it necessary to approach the question of reform by means of extra University investigation, the Council submits that the time is hardly well chosen, as the two new Colonies who are deeply interested in ~~all~~ the matter at issue, containing as they do 5/12 of the European population, are on the point of receiving self government, and it is impossible to say in what light they might view the proposed supersession of the University in one of its chief functions.

In the event of a contrary view being taken by the Legislatures of the new Colonies to the action of the High Commissioner it is indeed possible that a friction might be set up which would be highly detrimental to the cause that all have at heart.

15. For these reasons the majority of the University Council have respectfully submitted in the resolution which I have quoted, that nothing would be lost by postponing the meeting of the Conference until the policy of dealing with the question of University education can be submitted to the respective Legislatures, and I am to express a hope that the action of the Council in so doing will not be interpreted as a sign of any lack of interest in this important matter, or as an indication on its part that it is insensible to the need for University reform, which, as I have had the honour to point out, had for some time been the subject of its grave and earnest study.

B.

Under Colonial Secretary to Registrar.

Colonial Secretary's Office,
27th February, 1907.

Sir,

I am directed to acknowledge your letter of the 23rd instant covering a Resolution adopted by the University Council on the 16th idem, on the subject of the proposed Conference on University Education. Before proceeding to reply to the Resolution and the explanation

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of the reasons which, it is judged from your letter, actuated the majority of the Council to pass the Resolution in question, the Colonial Secretary considers that it might be as well to deal with the history of the proposed Conference, for he gathers that there is some misapprehension upon this point.

In December 1905 Sir John Buchanan, then, it is understood, pro Vice-Chancellor of the University, made a suggestion through Mr. Reunert to Lord Selborne that the time was ripe for a Conference; and Lord Selborne, no doubt believing, as the Government believed, that the Conference would meet a generally expressed wish -- which had been also put forward by Convocation as far back as 1901 in the form of a Joint Commission representing all the Colonies -- addressed a communication to His Excellency the Governor of Cape Colony, forwarding a copy of Sir John Buchanan's letter and Mr. Reunert's covering letter, as well as a letter from the Lieutenant Governor of the Transvaal. These communications were subsequently shown to the Vice-Chancellor, and, indeed, throughout the course of the last few months Colonel Grewe has on several occasions seen the Vice-Chancellor and communicated to him, from time to time, such information as he possessed.

The Government of this Colony, only anxious to assist the University in its desire to make their Institution the one University in South Africa, agreed to the Conference, but not until it had assured itself, by an informal Conference of Superintendents General, that the other South African Colonies were willing to assist, and that it was probable that the Conference, when held, would assist the University to achieve its object. The Colonial Secretary can only regret -- as he does most sincerely -- that he has mistaken the University's wishes and desires; but he would, in justification, add that he has never for one moment believed that the University Council would refuse to assist at the proposed Conference for the following reasons:--

It is true that on 8th November the University Council addressed a letter to this office in which, inter alia, the words occur as mentioned in paragraph 8 of your letter under reply, but he would point out that after the expression of regret at the lack of information the letter concludes with a Resolution:

"That the further consideration of the correspondence on the question of the Conference proposed to be held in January next should stand over until next meeting of the Council."

To that letter a reply was sent dated 14th November, but it did not go into the reasons that had actuated the Government, because Colonel Grewe had seen the Vice-Chancellor and had discussed the whole matter with him, and had explained to him that the cause of delay in sending information on the subject of the meeting of Superintendents General at Bloemfontein was due entirely to the fact that, when their report was handed in, he was absent in the Transkei, and did not return to Office until 30th October -- the date on which information was asked for by the Regisvar in his letter to the Colonial Secretary. A reply was sent immediately, which reached the University on the morning of

2nd November - the date of the meeting of the Council.

On November 14th information was received that the other Govern-ments had all agreed to the Conference, and on the same date an official letter was despatched to the Registrar of the University conveying this information; and on the 15th November a letter was received from the Registrar of the University replying to the letters of the 8th and 14th as follows:-

"In reply to your letter of the 8th instant, I am directed by the Vice-Chancellor to state that he will take the necessary steps for the nomination of four members by the Council as suggested, and with regard to your second letter I am informed by the Vice-Chancellor that he has already communicated with Lord Selborne through His Excellency the Governor with a view to ascertain whether it would not be possible, for reasons which I need not enter upon, for the Conference to be held later than January. If, however, this found impracticable, he would suggest that it might be held in the second half of January commencing on or about the 21st of that month.

The Vice-Chancellor further suggests that it would be very desirable that in the case of distant members of the Conference a double journey to Cape Town should be avoided. He is therefore anxious to arrange that the Conference should follow immediately after the special meeting of the Council. This need cause no difficulty for it is quite certain that all the members nominated by the Council will be at the special meeting, in which case the official appointments might be ready in blank and the names filled in at very short notice."

This letter certainly conveyed the impression that on the part of the University there was not likely to be any refusal to accept representation at the Proposed Conference. From time to time, Colonel Grewe discussed with the Vice-Chancellor the question of the Government's proposed nominees, and he was good enough to take a very active interest therein; and on December 4th a letter was addressed by Colonel Grewe to the Vice-Chancellor as follows:-

"I have received a telegram from the High Commissioner in which he states he has had a suggestion from you that the Conference on University questions should be postponed until March and His Excellency now asks for an expression of Minister's views on this point. The Govern-ment of course take into consideration the contention of the Governing Body of the University and I should therefore be grateful if you would send me, officially, an expression of your views on behalf of the Univer-sity Council.

I would like to add that personally I take the view that any postponement from the month of January, which was originally re-commended, may be unfortunate. I am informed that January was recommended by the Conference of Superintendents General of Education because it was feared that those who are opposed to the Principle of one University for the whole of British South Africa might gain strength and the object which we all have in view might be defeated."

To which Colonel Grewe received a reply, dated 5th December, cover-ing two Resolutions passed at a meeting of the Vice-Chancellor's Committee, which read as follows:-

- "1. That in the opinion of this Committee it would be exceedingly inconvenient for the University to pay adequate consideration to the question prior to its next ordinary meeting on the 15th February."
- "2. That this Committee recommends that the proposed Conference should be held not earlier than the 18th February."

From these Resolutions the Colonial Secretary thinks it was but natural to draw the conclusion that, whatever difficulty presented itself as to date, the University had no objection to the Conference itself. From time to time, up to 7th February, various communications passed between the Colonial Office and the University and from none of these did it appear that the University Council was likely to object to the conference.

On February 15th the Resolution referred to by you in your letter was passed and the Colonial Secretary found, for the first time, that there

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was serious objection to the conference itself. The Resolution was, I am told, passed by a very small majority, at a meeting when some fifteen members of Council were absent or did not vote; and it deals with the objection to the Conference on the grounds that "it was inexpedient to proceed with this matter until the opinion of the new Governments now about to be instituted across the Orange River can be ascertained."

As paragraphs 2,3,4,5,6,7,8,9,10,11,12,13 of your letter give reasons shewing that no Conference whatever is necessary, and the Resolution deals with matters connected with the two neighbouring Colonies north of the Orange River, it is not necessary to refer to them at any length, but in regard to paragraph 14, I would say that the suggestion of a Conference did not, in the first place, emanate either from this Government or from His Excellency the High Commissioner, but from a member of the University Council of high standing; neither was it proposed to supersede the functions of the University, but, at the suggestion of one who has held high office in the Council, to assist the University to attain the ends it had in view.

The Colonial Secretary can only regret that the majority of the University Council should have entirely misunderstood the reasons which actuated both the High Commissioner and the Government of this Colony, and he directs me to add that the expression of the Council's views has been conveyed to the High Commissioner with the request that he will convey them to the Governments of the various South African Colonies.

No doubt he has anticipated the very objections which your letter raised in paragraph 14, as from their nature there can be little doubt that they would naturally occur to him.

C.

Under Colonial Secretary to Registrar.

Colonial Secretary's Office,
2nd March, 1907.

Sir,

With reference to your verbal representations to the Colonial Secretary as to the necessity for a slight correction of my letter, No. B. 68/56/1447 of the 27th ultimo, on the above subject, I am directed by the Colonial Secretary to request that you will kindly amend the letter in question by altering the word "twelve" between the words "last" and "months" in the last line but one of the first page to "few", so that the clause will read "throughout the course of the last few months".

The office copy of the letter and the copies sent to His Excellency the Governor for transmission to His Excellency the High Commissioner will be similarly corrected.

D.

Registrar to Under Colonial Secretary.

11th March, 1907.

Sir,

I have the honour to acknowledge the receipt of your letter of February, No. B68/56/1446, and to state that it, with the correction specified in your letter of March 2nd, No. B68/183/1446, will be submitted to the Council at its next meeting in May.

E.

Under Colonial Secretary to Registrar.

Colonial Secretary's Office,
30th March, 1907.

Sir,

With reference to your letter dated 11th instant, on the above subject, in which you state that my letter No. B68/56/1446 of the 27th ultimo, together with the correction specified in my letter No. B68/183/1446 dated 2nd instant, will be submitted to your Council at its next meeting in May, I am directed to inform you that, owing to the inability of the University of the Cape of Good Hope to nominate delegates to the Conference at present and in view of your letter of the 23rd ultimo, His Excellency the High Commissioner was approached through His Excellency the Governor by Minute with a request that he should obtain the consent of the other Colonies concerned, to a postponement of the Conference itself.

Enquiry was made in the Minute above referred to as to whether those Colonies would be able to take part in a Conference to be held some time immediately after the next meeting of the University Council which would take place on Friday the 17th May, 1907, and at which it was hoped that, if all the Colonies reiterated their consent to the Conference, the University would rescind its Resolution and nominate representatives.

In response to the above Minute the following telegram was despatched by His Excellency the High Commissioner to His Excellency the Governor:-

"March 7 1907, No. 70/4. Your Despatch No. 90 of March 1st I am communicating with all the Governments with a view to postponement of Conference. As regards proposal to hold Conference in May, I would remind your Ministers that many of the Governments hope to send representatives to the Federal Conference on Education in London about that time. It might perhaps be difficult to send representatives to both Conferences."

In reply to the above telegram it was communicated to His Excellency the High Commissioner, by Minute to His Excellency the Governor, that if it was found impossible, in view of the difficulty represented, to hold the Cape Town Conference in May next, this Government would prefer the earliest possible date thereafter for the holding of the Conference.

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F.

Registrar to Under Colonial Secretary.

2nd April, 1907.

Sir,

I have the honour to acknowledge the receipt of your letter No. B68/883/1446, dated the 30th ultimo, referring to the University Conference to be held in Cape Town and to inform you that the letter will be submitted to the Council at its next meeting in May.

After discussion it was resolved that the Council do now proceed, in accordance with the invitation of the Honourable the Colonial Secretary conveyed to the Council in his letter dated the 8th November 1906, to nominate four of the seven members to represent the Cape Colony at the proposed Intercolonial Conference on University Education and that the Government be informed that in the opinion of this Council it is not expedient that the proposed conference should be held until after responsible Government has been established in the Orange River Colony.

In accordance with this resolution the following members of Council were nominated: Sir C. Storerombie Smith, Professor Ritchie, Professor Morrison, Professor Macfadyen.

With reference to these nominations the following resolution was adopted: That in nominating these gentlemen the Council desires to put on record that it has aimed at selecting delegates who are specially acquainted with different interests of education and not as representing the collective views of the Council.

With reference to the proposed scheme for University Reorganisation adopted at last meeting it was resolved that the confirmation of the scheme stand over sine die.

In consequence of this resolution the discussion of the following amendments which had been placed on the Agenda paper was not proceeded with:

Resolution to nominate four of the seven members to represent Cape Colony at the proposed Intercolonial Conference.

Members nominated.

Confirmation of proposed scheme for University Reorganisation to stand over, sine die.

A. Section 2 : By Professor Ritchie.

The section to read as follows:

- (a) One third shall be elected by Convocation,
- (b) certain members shall be appointed by the Councils and Senates of recognised Colleges as provided for in Sections 3, 4 and 5: and
- (c) the remainder shall be nominated by the Governments of Cape Colony and the other South African Colonies, and shall be respectively as nearly as possible in proportion to the European population of each Colony, (the intention being that the members elected under (a), (b) and (c) shall be approximately equal in number.)

B. Section 2 : By Mr. Fremantle.

- 1. in (b) after "certain members" to insert "not exceeding one third of the whole number", and to omit all the words after "Convocation" in (c).
- 2. in (c) after "Convocation" to insert "The members appointed under (b) to be appointed first, then the members appointed under (a) and finally the members appointed under (c)."

C. Section 3 : By Professor Morrison.

- (1) To substitute 75 for 50 (line 4).
- (2) To omit all the words after "College Courses" (line 4) for the purpose of substituting "provided also that such Colleges are adequately staffed and equipped. No College shall be judged to be adequately staffed unless in the Faculties of Literature and Philosophy and Science at least three-fourths of the subjects are taught by separate responsible teachers of approved standing. The Colleges to be recognised under the clause shall be named in the first instance by such Commission as shall be appointed to deal with University reorganisation, and thereafter recognition of any College for similar privileges shall be subject to the decision of the University Council."

D. Section 3 : By Professor Beattie.

- (1) To substitute 75 for 50 (line 4).
- (2) After "degree examinations" (line 5) to add the words "and provided that such colleges are approved of by the University Council."

E. Section 4 : By Professor Beattie.

To substitute 75 for 50, 150 for 100, and 250 for 200.

F. Section 10 : By Professor Logsdan.

After the words "degree examinations" (line 4) to add "and by the Principals and Vice-Principals of First-class Public Schools, who shall have the right to elect five representatives."

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G. Section 13 : By Professor Notcutt.
 clause (b) to read as follows:
 "To prescribe syllabuses for the University Examinations and the general lines which must be followed by syllabuses of study (for B.A. Pass, and M.A. Examinations) presented for approval by recognised Colleges; to consider and decide upon syllabuses so presented: subject in all cases to the approval of the council as provided in clause 14.

H. Section 14 : By Mr. Fremantle.
 To omit all the words after "been" (line 4) for the purpose of substituting "approved by not less than three-fifths of the whole number of members of the Council. Full notice to be given of the meeting at which the proposal to adopt the change in question, falling recommendation after consideration by the Senate, is to be brought forward, and voting by proxy to be allowed."

I. Section 15 : By Professor Notcutt.
 To add the following:
 "The B.A. Pass, and M.A. Examinations in each of the recognised Colleges to be conducted in each subject by the responsible teacher of that subject in the college, acting in conjunction with one or more external examiners appointed by the University Council."

J. Section 16 : By Professor Martin.
 In (b) to omit all the words after "that subject" (line 2).

K. Section 16 : By Professor Beattie.
 To add the following new clause:
 (c) No person may be a member of more than one board of examiners.

L. : By Sir W. Bisset Berry.
 "That this Council is of opinion that proposals for reorganisation should include statutory provision for empowering the University to co-operate with the Council of any recognised college in obtaining such sanction as may be necessary to enable the University to accept the financial control of such college as well as to assume the direction of its teaching.

Motions of which due notice had been given.

The following motions of which due notice had been given were submitted by the Vice-Chancellor:

- (a) That the scale of fees for chairmen of Committees of Examiners be revised.
- (b) That the Regulations for the M.A. and M.Sc. Examinations in the department of Mathematics be revised.
- (c) That the preparation of a syllabus in zoology for the Matriculation Examination under the amended scheme which comes into force in 1909 be referred to the Science Committee.