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Government of Madras

HOME DEPARTMENT (EDUCATION)

G.O. No. 515, 23rd April 1918

University Regulations

Sanctioning a new body of — for the institution of a Faculty of Science and Degrees therein.

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READ—the following papers:—

I

Letter—from F. DEWSBURY, Esq., B.A., LL.B., Registrar, University of Madras.
To—the Secretary to Government, Home (Education) Department.
Dated—Senate House, the 3rd November 1917.
No—8018.

At its adjourned meeting held on 22nd July 1916, the Senate appointed a committee 'to consider and report upon the advisability of instituting a Faculty of Science and a B.Sc. Degree, the general nature of the courses of study for this degree, and to submit proposals regarding the suggested Faculty of Science and B.Sc. Degree, should the committee consider it advisable to do so.' This committee submitted to the Senate at its meeting held on the 27th October 1916, an interim report, in accordance with which the Senate passed the following resolutions:—

- (1) That a Bachelor of Science Course and Degree be instituted.
- (2) That the Final Course of study for the B.Sc. Degree shall consist of any three of the following subjects:—
 Mathematics, Physics, Chemistry, Botany, Zoology and Geology, and a course in English similar to that prescribed at present for the Preliminary Honours Examination.
- (3) That the Preliminary Examination in English in the B.Sc. Course may be taken at the end of the first year's course or at any time thereafter.
- (4) That the subjects of the B.Sc. Course shall be of equal value and the standard in each shall be approximately the same as that of the subject taken as the main subject in the present B.A. Degree Course.
- (5) That the Intermediate in Arts be called the Intermediate in Arts and Science.
- (6) That the Boards of Studies concerned be requested to draw up syllabuses in the several subjects of the B.Sc. Course for the consideration of the committee.
- (7) That the B.Sc. Honours Courses in Mathematics, Physics and Chemistry be identical with the B.A. Honours Courses in these subjects.
- (8) That a candidate for the B.Sc. Honours Degree in Botany, Zoology or Geology shall take any one of these as his main subject and any two other subjects of the B.Sc. Course as subsidiary subjects; he shall be required to pass the B.Sc. Examination in his subsidiary subjects at the end of his second year.
- (9) That the Degree of Master of Science may be conferred on any Graduate in B.Sc. Honours under the following conditions:—
 (i) He shall work after graduation for not less than one year under the direction of a Professor of an affiliated college or other person approved by the Syndicate.
 (ii) He shall submit a thesis of original work done which shall be approved by each of three independent judges nominated by the Syndicate.
- (10) That the present Faculty of Arts be hereafter called the Faculty of Arts and Science.

At the same meeting of the Senate the committee was re-appointed, with one addition, 'to draft the necessary regulations on receipt of the syllabuses from the Boards of studies and report to a future meeting of the Senate.'

On the recommendation of this committee the Senate, at its meeting held on 19th October 1917 adopted the enclosed new body of regulations providing for courses of study and examinations in Science as well as the enclosed alterations in the existing regulations most of which are consequential; and I am directed by the syndicate to submit them for the sanction of Government under section 25 (1) of the Indian Universities Act, 1904.

ORIGINAL

2. Against the resolution of the Senate providing for the deletion of Physical Science and Natural Science from the list, in regulation 198 II, of branches of knowledge to be taken by B.A. (Honours) candidates [vide item 6 (a) in the alterations in the existing regulations enclosed], Mr. P. V. Seshu Ayyar has lodged a protest under Regulation 64. The procedure laid down in the regulation is being followed; and in due course the protest and the memorandum in support of the Senate's resolution prepared by the three members of that body duly elected for the purpose will be submitted for the consideration and orders of the Governor in Council.

ENCLOSURES

(i)

UNIVERSITY OF MADRAS.

Regulations for the Bachelor of Science, the Bachelor of Science (Honours) and the Master of Science Degrees.

COURSES OF STUDY AND EXAMINATIONS FOR THE DEGREES IN SCIENCE.

Undergraduates who have passed the Intermediate Examination in Arts and Science and desire to proceed to a degree in Science shall undergo a further course of study varying in length according as they intend to proceed to the Bachelor of Science Degree Examination or to the Bachelor of Science (Honours) Degree Examination.

BACHELOR OF SCIENCE DEGREE.

A. Courses of Study.

2. For the Bachelor of Science Degree the course shall extend over a period of two years and shall comprise instruction in—

Part I. English.

Part II. Any three of the following branches of knowledge:—

- | | |
|------------------|---------------|
| (i) Mathematics. | (iv) Botany. |
| (ii) Physics. | (v) Zoology. |
| (iii) Chemistry. | (vi) Geology. |

3. The courses of study shall be as defined in the syllabuses detailed below:—

Part I. English.

(1) Composition. (2) Nineteenth Century Prose as prescribed for candidates for the B.A. Degree.

Part II.

I. Mathematics.

In addition to the subjects prescribed under (a) Mathematics in Group (i) of the Intermediate Examination, the course will comprise Algebra, Plane Trigonometry, Analytical Geometry, Elements of the Calculus, Dynamics and Astronomy.

Pure Mathematics.

Algebra.

Inequalities. Limits. Elementary theorems in convergence and divergence of series. The Binomial Theorem for any rational index. Exponential and Logarithmic series. Partial fractions. Elementary methods for the summation of series. Elementary properties of simple continued fractions. Intermediate equations of the first degree. Elementary properties of Determinants.

Typical graphs; $y = ax^n$, $y = \frac{a}{x^n}$, $y = ax + b + \frac{c}{x}$, $y = ax + b + \frac{c}{x^2}$.

Graphical solution of cubic and biquadratic equations.

General properties of the equation of the n th degree and its roots and co-efficients. Simple transformations of equations. Reciprocal equations. Approximate solution of numerical equations.

Trigonometry

Fuller treatment of the Intermediate course. Quadrilaterals inscribed in and circumscribed about circles. Regular polygons. Limits of $\sin x/x$ and $\tan x/x$ as x tends to zero, De Moivre's theorem and its immediate applications. Summation of elementary trigonometrical series.

Analytical Geometry

The Cartesian equations of the straight line and the circle referred to rectangular axes; the parabola, ellipse and hyperbola referred to their principal axes; and the rectangular hyperbola referred to its asymptotes. The general equation of the second degree. The polar equations of the straight line, circle and the conic. Simple problems on the above.

The Calculus

Standard forms and fundamental processes of differentiation and integration. Simple applications of the derivative to geometry, algebra, dynamics and physics. Maxima and minima values of a function of one variable. Theorem of mean value (graphical proof). Approximations and small errors. Curvature, Cartesian formulae for the radius of curvature. Integration by substitution. Integration by parts. Integration regarded as summation, with simple applications to areas, volumes and surfaces and to dynamics. Solution of the differential equation of simple harmonic motion.

Applied Mathematics.

Dynamics.

Resolution and composition of displacements, velocities, and accelerations. Curves of speed and velocity diagrams. Motion of a particle in one plane under constant acceleration. Simple harmonic motion; composition of simple harmonic motions. Angular velocity and angular acceleration; moment of velocity.

Absolute units of force. Resolution and composition of forces. Angular momentum moments of inertia in simple cases; the pendulum; determination of g . Work, energy, conservation of energy; energy diagrams. Impact; the ballistic pendulum. Simple cases of the dynamics of strings. Dimensions of dynamical units.

Conditions of equilibrium of a body acted on by forces in one plane. Moments, couples. Centre of mass. The theory of simple machines. Laws of friction. Graphical methods with simple applications.

Astronomy.

The apparent motion of the heavens. Circumpolar stars. The principal constellations and the most conspicuous stars.

The celestial sphere.—Points and lines on it: Horizon, zenith, poles, meridian, etc., the equinoctial points, etc.

Celestial co-ordinates:—Right ascension, declination, etc., latitude and longitude.

The transit circle. The equatorial, the clock. The transit theodolite. The sextant and chronometer.

Phenomena depending on change of latitude and longitude of the observer. Magnitude of the earth.

The apparent annual motion of the sun. The constellations of the zodiac. The ecliptic and its obliquity. The equinoxes and the solstices. The earth's motion round the sun. The seasons.

Sidereal time. Apparent solar time. Mean solar time. Equation of time. Standard time (India). Civil and astronomical reckoning. Conversion of time.

Explanation of astronomical refraction and parallax. Twilight.

Determination by observation of clock error and rate, of right ascension and declination of a heavenly body, and of the latitude and longitude of a station.

The solar system, and the motion of the planets. Kepler's laws. Comets and meteors.

The motion of the moon and her phases. The plane of her orbit. The nodes and their motion. The moon's sidereal and synodic periods. Her diameter and distance.

Distances and magnitude of the sun, moon and planets.

Causes of the eclipses of the sun and moon. Ecliptic limits. Number of eclipses in a year.

The Calendar. The use of the Nautical Almanac.

II. Physics.

(The treatment of the subjects in the following course will require knowledge of the simpler applications of the calculus.)

Dynamics	...	...	...	...	as in the B.A. (ii-A) Course
Properties of Matter	...	...	...	...	do.
Hydrostatics	...	...	...	...	do.
Heat	...	...	...	...	do.
Light	...	...	...	...	do.

with 'Achromatism in lens systems' deleted and the following added 'Cardinal Points of thick lenses and simple lens systems. Simple cases of astigmatism spherical and chromatic aberration'.

Magnetism	...	...	...	...	as in the B.A. (ii-A) Course
Electricity	...	...	...	...	do.
Sound	...	...	...	...	do.
Practical Physics	...	...	...	...	do.

At the practical examination the candidates' laboratory note books should be submitted.

Each note book must be countersigned by the professor or professors under whom the candidate has worked to certify it to be a *bona fide* record of work done by the candidate.

III. Chemistry

The course in Chemistry shall include—

1. General Inorganic and Organic Chemistry including chemical theory.
2. One of the following treated more fully at the option of the candidate:—
 - (a) Chemistry of the non-metals.
 - (b) Chemistry of the metals.
 - (c) Organic Chemistry.
3. Practical Chemistry.

The syllabuses for these courses are given below—

- (i) Chemistry Inorganic including Chemical Theory.

Methods of determining equivalent, atomic and molecular weights; the atomic theory; valency; properties of gases; transition from gaseous to liquid state; vapour pressure and boiling point; osmotic pressure; theory of electrolytic dissociation; electrolysis; relation of chemical energy to electrical energy and to heat; law of mass action; catalysis; relation of physical properties to chemical constitution.

The descriptive portion will include the elements and their compounds studied from the stand point of the periodic classification omitting the rare metals.

The following indicates the scope of the examination in Organic Chemistry:—

The elements of Organic Chemistry; the composition and relations of some of the typical carbon compounds; isomerism; polymerism; purification of organic substances; distillation; crystallization; criteria of purity; boiling point; melting point; methods of ultimate analysis of organic compounds; calculation of molecular weight from empirical formulae; constitutional formulae

Methane; ethane; ethylene; acetylene; methyl chloride; methylene dichloride; chloroform; bromoform; *iodoform*; carbon tetrachloride; methyl alcohol; ethyl alcohol; ether; formaldehyde acetaldehyde; chloral; formic acid; acetic acid; butyric acid; stearic acid; esters; simple amines; oxalic acid; malonic acid; succinic acid; glycerol; the fat; lactic acid; tartaric acid; citric acid; the carbohydrates; starch; benzene; toluene; chlorobenzene; nitrobenzene; aniline; benzene sulphonic acid; diazobenzene; benzaldehyde; benzoic acid; benzyl alcohol.

- (ii) (a) Chemistry of the Non-metals considered in detail.
- (b) Chemistry of the metals (omitting the rare metals) considered in detail.
- (c) Organic Chemistry (present syllabus).
- (iii) Practical Chemistry (present II-B syllabus) with potassium in (2) deleted.

IV. Botany

1. The main points of structure, development, life history and the taxonomic relation of the following groups in general and the genera in particular:—

Bacteria, *Cyanophyceae* (*Oscillaria*, *Nostoc* and *Rivularia*), *Conjugatae* (*Spirogyra* Deysmids), *Diatomaceae*, *Chlorophyceae* (*Chlamydomonas*, *Eudorina*, *Pandorina*, *Volvox*, *Enteromorpha* or *Ulva*, *Coleochaete*, *Ulothrix*, *Oedogonium*, *Cladophora*, *Hydrodictyon*, *Caulerpa* and *Protosiphon*), *Phaeophyceae* (*Ectocarpus*, *Laminaria*, *Fucus* and *Sargassum*), *Rhodophyceae* (*Lemanea*, *Dudresnaya*, *Polyides*), *Characeae* (*Nitella* or *Chara*), *Phycomyces* (*Pythium*, *Mucor*), *Ascomycetes* (*Sphaeroteca* or *Erysiphe*, *Penicillium*, *Claviceps*, *Peziza*), *Basidiomycetes* (*Agaricus*, *Lycoperdon*, *Ustilago*, *Puccinia*) *Muscineae* (*Polytrichum*, *Funaria*, *Marchantia* Riccia), *Eusporangiales* (*Ophioglossum*), *Leptosporangiales*), *Filices* and *Hydropteridae*, *Lycopodium*, *Selaginella*, *Gymnosperms* (*Pinus*, *Cupressus* and *cycas*).

2. The external morphology of flowering plants.

3. The general principles of classification and the distinguishing characteristics of the following Natural orders as used in the Flora of British India:—

Ranunculaceae.	Oleaceae.	Anacardiaceae.	Euphorbiaceae.
Anonaceae.	Apocynaceae.	Papilionaceae.	Urticaceae.
Menispermaceae.	Asclepiadaceae.	Cacsalpineae.	Piperaceae.
Nymphaeaceae.	Boraginaceae.	Mimosaceae.	Lauraceae.
Cruciferae.	Convolvulaceae.	Rosaceae.	Orchidaceae.
Capparidaceae.	Solanaceae.	Combretaceae.	Scitamineae.
Caryophyllaceae.	Scrophulariaceae.	Myrtaceae.	Amaryllidaceae.
Guttiferae.	Acanthaceae.	Lythraceae.	Liliaceae.
Malvaceae.	Labiatae.	Cucurbitaceae.	Commelinaceae.
Sterculiaceae.	Verbenaceae.	Umbelliferae.	Palmeae.
Tiliaceae.	Rutaceae.	Rubiaceae.	Aroidae.
Geraniaceae.	Meliaceae.	Amarantaceae.	Cyperaceae.
Compositae.	Rhamnaceae.	Loranthaceae.	Gramineae.
Sapotaceae.	Sapindaceae.		

4. Physiology

The chemical composition of the plant. Materials of plant food and their sources. The nature of soil and importance of its constituents and micro-organisms. Movement of water and gases. Assimilation of carbon and nitrogen. Transpiration and translocation of the assimilated products. Metabolism. Parasitism and other special modes of nutrition. Respiration. The influence of light, heat and gravity. Growth, movements and irritability in plants. Sexual reproduction and its significance. Vegetative reproduction. The phenomena of cross-fertilization. Variation, Heredity, and Mendelism. Theories of Evolution and origin of Species.

5. Histology.

The structure and modes of the division of the cell, and the nature of its contents. The nature and mode of origin of plastids, cell sap and other cell contents. The physical and chemical properties of protoplasm and cell-wall. The origin, nature and development of plant tissues. Primary and secondary tissues, and their distribution in the plant body.

Practical Work.

Candidates are expected to be able to make preparations illustrating the form and structure of any plant of the groups or orders mentioned in the syllabus and to describe them with sketches sufficient for their identification; to make dissections with the simple microscope of the floral parts of phanerogams, and to make drawings, construct floral diagrams and refer them to their natural orders; to describe in technical language plants belonging to any of the orders or groups specified in the syllabus.

At the practical examination each candidate must submit his laboratory note books and a collection of named plants collected and preserved by himself.

V. Zoology

The Scope of zoology.—The leading features in the structure, the most important points concerning the development, the affinities, and the general classification of the forms included in the following groups (except in rare cases, no knowledge of extinct forms will be required).—

Protozoa. Porifera. Coelenterata. Platyhelminia. Nemertini Nematoda. Acanthocephala. Chetognatha. Rotifera. Brachiopoda. Annelida, Phoronidea Polyzoa. Arthropoda. Mollusca. Echinodermata Chordata.

A general acquaintance with the vertebrate fauna of South India.

The geographical distribution of the more interesting groups of the Chordata. Outlines of the theory of organic evolution. Evidences on which the theory is based.

Candidates will be required to examine describe, identify, or otherwise deal with specimens and preparations illustrating points of zoological interest in connexion with any of the preceding groups. They will in addition, be expected to have a full practical knowledge of the structure, and will be required to make dissections and simple microscopical preparations, of any of the following types:—

Amoeba. Vorticella. Hydra. Earthworm. Leech. Prawn and Crab (external characters). Scorpion. Centipede (external characters). Cockroach. Freshwater Mussel. Amphioxus (preparations and sections). Dogfish (skeleton). Frog. Pigeon. Hare or Rabbit.

Candidates may also be examined by *viva voce* questions.

VI. Geology.

- I. Physiography.
- II. Mineralogy and Crystallography.
- III. Petrology.
- IV. Structural and field Geology.
- V. Stratigraphy and Palaeontology.

I. PHYSIOGRAPHY.

An elementary course of lectures on the following:—

The earth as a planet, its general relations to the other members of the solar system, hypotheses as to the origin of the earth; form, size and density of the earth; its movements and their effects.

The Atmosphere—its composition, height, density, pressure, temperature, moisture and movements; weather; refraction, twilight and aurora-borealis.

The Hydrosphere—its composition, extent and distribution, depth, temperature and movements.

The Lithosphere—the chief constituents of the earth's crust, the general characters and mode of occurrence of igneous and sedimentary rocks. Condition of the interior of the earth.

Agents of geological change.—The hypogene and epigene agents of geological change, manner and results of their action, especially as influencing earth-sculpture—the destruction, construction, and gradual evolution of the crust of the earth and of its surface features.

Fossils, the main conditions favourable for their formation and preservation and their value as interpreters of the past history of the earth.

Climates—their causes and distribution; glacial epochs.

Simple facts about the geographical and geological distribution of the chief types of plant and animal life. Antiquity of man. Views as to the age of the earth's crust.

II. MINERALOGY AND CRYSTALLOGRAPHY.

Symmetry; lines, planes and axes of symmetry; laws of Crystallography; the common holohedral, hemihedral and hemimorphic crystal forms and combinations under each of the six crystal systems; the more important types of twins and twinning; drawing of the more important crystal forms; systems of crystal notation, use of the contact Goniometer.

The principal physical properties of minerals which aid in the recognition of the various mineral species.

Isomorphism, paramorphism, pseudomorphism and dimorphism.

The chief characteristics of all the more abundant minerals, including both those which are of geological interest and those of commercial value, their modes of occurrence and uses.

The practical determination of the chief physical and chemical properties of the commoner ores and minerals, including the use of the blowpipe.

III. PETROLOGY.

The classification and distribution of rocks, and the composition, structure, texture, origin and mode of occurrence of all the more important types and their metamorphic and altered forms.

Contact and Regional Metamorphism.

The macroscopic and microscopic examination of rocks, including the determination of the simpler optical characters of the chief rock forming minerals in parallel polarized light. Preparation of diagrams or sketches to represent features observed in rock section under the microscope. Construction and use of a simple petrological microscope.

IV. STRUCTURAL AND FIELD GEOLOGY.

The more important lithological and structural features of rocks, their origin or formation; structure of mineral veins. Diagrammatic sketches of the above.

Construction and Interpretation of geological maps and sections. Tracing of outcrops. Simple problems in structural geology.

V. STRATIGRAPHY AND PALAEONTOLOGY.

The chief petrological and palaeontological characters of the main geological divisions and their Indian representatives and the probable physical conditions under which they were formed.

Fossils, their nature and preservation. The main groups of vegetable and animal life and their distribution in time.

The characters, classification and distribution of the more important types of fossils—especially Indian; identification and sketching of fossils; causes for the imperfection of the geological record; the general succession of life as revealed thereby and the general evidence furnished in support of evolution; principles of correlation; Homotaxis.

VI. PRACTICAL EXAMINATION.

The knowledge of the candidate in accordance with the syllabus will be tested also by practical examinations. *Viva voce* questions may be asked. Some acquaintance with field work is necessary.

B. Examinations.

4. The examination for the degree of Bachelor of Science shall be held once a year in Madras. Candidates may also be examined at other centres appointed by the Syndicate. A list of places at which the examination will be held shall be published annually in the preceding April. Part I shall commence on the first Monday and Part II on the first Tuesday in April, but Thursday, Friday and Saturday before Easter Day shall be *dies non*.

5. (a) No candidate shall be eligible for the Degree of Bachelor of Science until he has passed the examination in Part I—English and in Part II, viz., three of the optional branches of knowledge contained in the courses of study.

(b) No candidate shall be admitted to the examination unless he has passed the Intermediate Examination in Arts and Science in this University or an examination accepted by the Syndicate as equivalent thereto. Each candidate for examination in either part must forward with his application his intermediate or other accepted certificate and he must also forward, so as to reach the Registrar before the 20th March preceding the examination, certificates, in the forms hereinafter prescribed, from the head of an affiliated college, to the effect that he attended an affiliated college for a period of at least one year in the case of Part I, or of at least two years in the case of Part II, after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed the course of instruction prescribed for the part or parts in which he proposes to appear, and that his progress and conduct have been satisfactory.

6. A candidate for the B.Sc. Degree Examination may present himself for Part I at the end of the first year of the course and thereafter may at his option present himself for the whole or for either part at any one time.

7. A candidate who fails to pass the examination in Part II on the first occasion on which he presents himself for examination shall produce on the next occasion on which he presents himself for the examination a certificate of having attended in an affiliated college an additional year of instruction in each of the three selected optional branches of knowledge.

8. Applications for admission to either part of the examination in the form prescribed must reach the Registrar not later than the 20th January preceding the examination.

9. No candidate shall be admitted to the examination until he has been registered. No candidate shall be registered for Part I of the examination till he has paid a fee of ten rupees, or for Part II of the examination until he has paid a fee of thirty-six rupees. A candidate shall be registered afresh on each occasion on which he presents himself for examination.

10. The examination for the B.Sc. Degree shall be conducted in the order of time and subjects set forth in the following tables, and the number of marks assigned to each subject shall be as therein specified. In the case of Part II of the examination the date of the first day of the examination in each of the optional branches of knowledge shall be determined annually by the Syndicate and shall be notified in the *Gazette* in the month of February.

PART I.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Composition ...	90
	2—4 30	Nineteenth Century Prose ...	60
Total ...			150

PART II.

Mathematics.

First day ...	10—1	Algebra and Trigonometry ...	90
	2—4	Astronomy ...	60
Second day ...	10—1	Calculus and Analytical Geometry ...	90
	2—4	Dynamics ...	60
Total ...			300

Physics.

First day ...	10—1	Properties of matter and Heat ...	100
	2—5	Light, Electricity and Sound ...	100
Second day ...	10—1	Practical Physics ...	100
Total ...			300

Chemistry.

First day ...	10—1	General Chemistry ...	100
	2—5	Optional Chemistry ...	100
Second day ...	10—4	Practical Chemistry ...	100
Total ...			300

Botany.

First day ...	10—1	Botany I ...	100
	2—5	Botany II ...	100
Second day ...	10—1	Practical Botany I ...	50
	2—5	Practical Botany II ...	50
Total ...			300

Zoology.

First day ...	10—1	Zoology I ...	100
	2—5	Zoology II ...	100
Second day ...	10—1	Practical Zoology I ...	50
	2—5	Practical Zoology II ...	50
Total ...			300

Geology.

First day ...	10—1	Geology I ...	100
	2—5	Geology II ...	100
Second day ...	10—1	Practical Geology I ...	50
	2—5	Practical Geology II ...	50
Total ...			300

11. No candidate shall be declared to have passed Part I of the examination unless he obtains not less than 40 per cent of the total number of marks. No candidate shall be declared to have passed Part II of the examination unless he obtains not less than 40 per cent of the total marks, and not less than 30 per cent in each of the three selected optional branches of knowledge.

There shall be separate lists of the successful candidates in each part. Candidates obtaining not less than 60 per cent of the total marks in Part I shall be declared to have passed with distinction in English.

Successful candidates in Part II shall be arranged in three classes :—The *first*, consisting of those who obtain not less than 60 per cent : the *second* of those who obtain not less than 50 per cent; and the *third*, of the remainder.

COURSES OF STUDY AND EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE (HONOURS.)

A. Courses of study.

1. For the B.Sc. Honours Degree the course shall extend over a period of not less than three years, and shall comprise instruction in
Part I English
Part II

Either

one of the following branches of knowledge :—

- i. Mathematics.
- ii. Physics with Chemistry as a subsidiary subject.
- iii. Chemistry with Physics as a subsidiary subject.

or

one of the following as main subject and any other two of those prescribed for the B.Sc., Pass Degree as subsidiary subjects :—

- iv. Botany.
- v. Zoology.
- vi. Geology.

2. The course of study in English and in the subsidiary subjects in the case of students taking iv, v, or vi as the main subject shall be the same as for the B.Sc. Pass Degree. The courses of study in the main subject are as detailed below :—

I. Mathematics.

A candidate shall be required to have a sound knowledge of—

(a) Pure Mathematics :

1. Pure Geometry including Projective Geometry.
2. Algebra and theory of Equations.
3. Trigonometry, plane and spherical.
4. Differential and Integral Calculus, including Fourier's series.
5. Elementary Differential Equations.
6. Co-ordinate Geometry of two dimensions
7. Solid Geometry—the line, plane, sphere and surfaces of the second degree.

(b) Applied Mathematics :

1. Statics, excluding the theory of potentials.
2. Dynamics of a Particle.
3. Dynamics of a Rigid Body—motion in two dimensions.
4. Hydrostatics.
5. Astronomy.

(c) Any two of the following subjects at the option of the student :—

1. Hydrodynamics—irrotational motion and liquid wave motion in two dimensions.
2. Thermodynamics.
3. Theory of Light.
4. Advanced Dynamics.
5. Attraction and the Theory of Potentials.
6. Theory of Heat Conduction.

A candidate shall give notice, through his college a year before the date of the examination, of the particular subjects he proposes to take.

Three papers shall be set in Pure Mathematics, three in Applied, and one in each of the optional subjects selected. Each paper shall be of three hours' duration and shall contain questions on the Principles developed in the ordinary treatment of the subject as well as exercises of moderate difficulty arising therefrom.

II. Physics.

A candidate shall be required to have a sound knowledge of the experimental side of the following subjects, and also such knowledge of the theoretical side of each as may be obtained by the applications of the calculus, and simple differential equations :—

Properties of matter.

Heat

Geometrical and Physical Optics.

Sound.

Magnetism and Electricity

A candidate shall also be required to have a special knowledge, experimental and theoretical, of one of the following subjects, the choice of the subject being left to the option of the candidate :—

Thermodynamics.

Theory of Heat Conduction.

Kinetics Theory of Gases and its applications.

Theory of Electricity and Magnetism.

Radio activity.

Theory of Sound.

Wave Theory of Light.

Radiation : Electromagnetic and other theories.

A candidate shall give notice, through his college, a year before the date of the examination, of the particular subject he proposes to take.

The knowledge of the candidate shall be tested by a practical examination, in which he will be expected to make physical measurements and observations of the more advanced kind.

Each candidate shall submit his laboratory note-books containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the professor or professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the examiners engaged in conducting the examination.

Chemistry.—The course shall be the same as that prescribed for students taking the course in ii-A for the B.A. Degree.

III. Chemistry.

Chemistry.—A candidate shall be required to show that he has made a more comprehensive study than for the B.A. Degree, of the four main divisions of the subject :—

1. General theoretical Chemistry, including its historical development.
2. Chemistry of the non-metals and metals.
3. Chemistry of the carbon compounds.
4. Physical Chemistry.

A candidate shall also be required to have a special knowledge, experimental and theoretical, of one of the following subjects, the choice of subject being left to the option of the candidate :—

- (a) Electro-Chemistry.
- (b) Mineralogy and Elementary Crystallography.
- (c) Elementary Crystallography and Stereochemistry.
- (d) Metallurgical Chemistry.
- (e) Inorganic Chemistry.
- (f) Bio-Chemistry.
- (g) Chemistry of the rare earths and radio-elements.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subject he proposes to take.

The candidate shall be required to be practically familiar with the ordinary methods of experiment, and of the methods of analysis in common use, including the manipulation of gases. The examination shall also include the estimation of carbon, hydrogen, nitrogen, sulphur and the halogens in organic compounds; and the determination of molecular weights by the freezing and boiling point methods, and by vapour density.

The candidate shall submit his laboratory note-books containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the professor or professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the examiners engaged in conducting the examination.

Physics.—The course shall be the same as that prescribed for students taking the course in (ii-B) for the B.A. degree.

IV. Botany.

In addition to the course prescribed for the B.Sc. Degree the following :—

1. A fuller knowledge of the flowering plants of India and especially of South India, with regard not only to systematic relationships, but also to ecology, distribution and relationships with those of neighbouring areas.

2. A general knowledge of the principles of the systematic arrangement of flowering plants as exemplified in the *Genera Plantarum* and in *Die Natürlichen Pflanzenfamilien*.

3. The chief Botanical sources and commercial applications of the following economic products of India :—Cotton, jute and other fibres; vegetable oils; sugars; wood pulp; rubber; tannin; alkaloids.

4. A fuller knowledge of Fungi, especially with reference to their economic importance.

5. Methods of plant Histology and plant Physiology.

6. A general knowledge of Vascular Cryptogams and Gymnosperms and of Palaeobotany, especially with reference to the relationships of modern groups.

7. Some acquaintance with current Botanical literature and with the History of Botany.

Candidates will be required to present as a special subject one of the sections numbered 1, 3, 4, 5 and 6, and each candidate must give notice through his college, a year before the date of examination, of the particular subject he proposes to present.

The practical examination for the B.Sc. Honours Degree may include—

1. The identification of Indian plants with the help of a flora or any other books allowed by the examiners.

2. The preparation and correct interpretation of microscopic sections of plants.

3. The examination of a diseased or abnormal plant.

4. Practical Physiology and *viva voce* questions.

Every candidate will be required to submit a collection of named flowering plants, collected and preserved by himself. There may be also plants of one of the other main divisions of the vegetable kingdom.

V. Zoology.

The course shall be more complete than that for the B.A. Degree. The candidate will, in addition to the scheme already outlined, be expected to have a knowledge of minor groups like the Mesozoa, the more important groups of extinct animals, the early development of the chick and the outlines of vertebrate embryology and to go into the classification more fully. The practical work will not be confined to the types enumerated. The candidate may be required to dissect any of the more common types of animals included in the classes they study, to identify specimens with the aid of manuals, to report upon zoological collections, to make microscopical preparations, to cut sections with the microtome, and to show their practical acquaintance with the methods employed in studying the embryology of the chick. Candidates may also be examined by *viva voce* questions.

VI. Geology.

The syllabus of the B.Sc. Degree course treated more fully with the following additions:—

Mineralogy and Crystallography.—The thirty-two types of crystal symmetry, theories of crystal structure, systems of crystal notation, zonal characters, crystal projections and drawing; twin crystals, grouping and irregularities of crystals, parting planes, percussion figures, etched figures, etc. Use of the Reflecting Goniometer. General mathematical relations of crystals and measurement of crystal angles.

Description and determination of minerals by chemical and physical tests.

The chief ores and minerals of commercial value; their distribution, occurrence, with special reference to Indian examples, and their uses; nature and structure of chief types of ore deposits.

Petrology.—The principles underlying the genesis and classification of rocks. Mechanical separation of rock constituents; examination of sands; methods of the preparation of rock sections for the microscope. Optical properties of crystals. Practical determination of the optical characters of the chief rock forming minerals with the petrological microscope, including the use of convergent light. Determination of the nature and history of rocks by means of the microscope.

Structural and Field Geology.—The relationships of structure to relief, drainage and economics. The composition and structure of rock masses as influencing scenery. Weathering and formation of soils. Each candidate is required to map and describe from his own personal observations the geology of an area selected by himself with the approval of the Professor.

Stratigraphy and palaeontology.—The geological formations with their lithology, subdivisional fossils, correlation and economics. The physical geography and vulcanicity of the different periods. General distribution of existing faunas and floras and their relation to those of former geological periods; morphological characters of the more important types of fossils; drawing of fossils; Geology of India brought up to date.

The knowledge of the candidate will be tested also by practical examinations. *Viva voce* questions may be asked.

B.—Examinations.

3. The examination for the B.Sc. (Honours) Degree shall be held in Madras once a year commencing in the case of Part I on the first Monday in April, and in the case of Part II on the last Monday in March, but the Thursday, Friday and Saturday before Easter Day shall be *dies non*. Candidates may also be examined at other centres appointed by the Syndicate. A list of places at which the examination will be held shall be published annually in the preceding April.

No candidate shall be eligible for the B.Sc. (Honours) Degree until he has passed an examination in English and in one of the six branches of knowledge and prescribed combinations of subjects detailed in the courses of study.

4. The examination in Part I (English) shall be that for the B.A. and B.Sc. Degrees in (1) Nineteenth century prose, and (2) composition on additional set books. No candidate shall be declared to have passed unless he obtains 40 per cent of the total in those papers: candidates obtaining 60 per cent shall be declared to have passed with distinction.

(a) No candidate shall be admitted to the examination in Part I (English) unless he has passed the Intermediate Examination in Arts and Science in this University or an examination in some other University recognized by the Syndicate as equivalent thereto. Each candidate must forward with his application his Intermediate or other accepted certificate.

(b) A candidate applying for the examination in Part I (English) shall forward, so as to reach the Registrar before the 20th March preceding the examination, a certificate in the form hereinafter prescribed, from the head of an affiliated college to the effect that he has attended an affiliated college for a period of at least one year after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed a course of instruction in English, and that his progress and conduct have been satisfactory.

5. A candidate who is taking one of the three subjects, Botany, Zoology or Geology as his main subject, may appear for the examination in the subsidiary subjects at the end of the second year of the course. He shall not be admitted to the examination unless he has passed the Intermediate Examination in Arts and Science in this University, or an examination in some other University accepted by the Syndicate as equivalent thereto. He must forward with his application his Intermediate or other accepted certificate and he must also forward, so as to reach the Registrar before the 10th March preceding the examination, certificates in the forms hereinafter prescribed, from the head of an affiliated college to the effect that he attended an affiliated college for a period of at least two years after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed the course of instruction prescribed for the subject or subjects in which he proposes to appear, and that his progress and conduct have been satisfactory.

6. The examinations in Botany, Zoology and Geology taken as subsidiary subject shall be the examinations in those subjects for the B.Sc. Degree. No candidate failing to pass the B.Sc. Degree Examination in the two subjects taken as subsidiary shall be admitted to the final examination in his main subject.

7. A candidate applying for the examination in Part II in Mathematics, Physics or Chemistry or in Botany, Zoology or Geology taken as a main subject, shall forward, so as to reach the Registrar before the 20th March preceding the examination, a certificate in the form hereinafter prescribed, from the head of an affiliated college to the effect that he has attended an affiliated college for a period of at least three years after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed the course of instruction in the subjects in which he proposes to appear, and that his conduct and progress have been satisfactory.

8. No candidate shall be admitted to any part of the examination until he has been registered. No candidate shall be registered for Part I (English) till he has paid a fee of ten rupees; nor for the examination in the two subsidiary subjects (taken with either Botany, Zoology or Geology as main subject) of Part II till he has paid a fee of twenty-five rupees; nor for the examination in Botany, Zoology or Geology taken as a main subject of Part II till he has paid a sum of twenty-five rupees; nor for the examination in Part II in any other branch of knowledge until he has paid a sum of fifty rupees.

9. On the first day of the practical examination in his main subject every candidate shall submit his laboratory note books containing the drawings and other record relating to all his practical work performed during the period of study for the examination. The record shall be countersigned by the professor or professors under whom the candidate has worked and shall be certified to be a bona fide record of work performed by the candidate.

10. A candidate for the B.Sc. (Honours) Degree who has passed the B.Sc. Degree Examination shall be permitted to appear for the B.Sc. (Honours) Degree Examination after a further two years' course, provided he has passed the B.Sc. Degree Examination in the subjects for which he desires to appear. Each such candidate shall forward so as to reach the Registrar before the 20th March preceding the examination, certificates in the form hereinafter prescribed, from the head of an affiliated college to the effect that he has attended an affiliated college for a period of at least two years after passing the B.Sc. Degree Examination, that he has completed the course of instruction in the subjects in which he proposes to appear and that his conduct and progress have been satisfactory. He shall be exempted from passing the Part I examination in English and from the examination in the subsidiary subject or subjects, and shall be credited with the percentage of marks which he obtained in those subjects in the B.Sc. Degree Examination.

11. A candidate for the B.Sc. (Honours) Degree shall appear for the final examination in Part II not later than the end of the fourth year after he has passed the Intermediate Examination in Arts and Science.

12. No candidate shall be permitted to undergo the complete final examination in Part II for Honours more than once.

13. In the event of a candidate for the B.Sc. (Honours) Degree failing to satisfy the Examiners in Part II of the examination he may be recommended by them for the B.Sc. Degree, provided that he has passed in Part I (English) and obtains not less than 35 per cent of the total marks and not less than 25 per cent in each division of the examination in Part II.

14. A candidate not already eligible for the B.Sc. Degree, who, having failed completely in the B.Sc. (Honours) Degree Examination, desires to appear for the B.Sc. Degree Examination, shall be allowed to do so without the production of a further certificate of attendance in an affiliated college in the subjects in which he has already appeared.

15. No candidate shall be declared to have passed the B.Sc. (Honours) Degree Examination unless he has obtained—

40 per cent of the total marks in Part I (English) and 40 per cent of the total marks in Part II and 80 per cent of the marks in each division of Part II. The divisions shall be as follows:—

(i) *Mathematics*.—(a) Pure Mathematics, (b) Applied Mathematics, (c) Optional subject.
(ii) *Physics* or (iii) *Chemistry*.—(a) Written examination in the main subject. (b) Practical examination and laboratory note books in the main subject, (c) Subsidiary subject.

(iv) *Botany*, (v) *Zoology* or (vi) *Geology*.—(a) Written examination in the main subject. (b) Practical examination and laboratory note books in the main subject. (c) A subsidiary subject. (d) Another subsidiary subject.

Candidates obtaining Honours shall be ranked in the order of proficiency as determined by the total marks obtained by each and shall be arranged in three classes:—

The *first*, consisting of those who obtain not less than 60 per cent; the *second*, of those who obtain not less than 50 per cent; and the *third*, of those who obtain not less than 40 per cent of the total marks.

The final examination for the (Honours) Degree shall be conducted in the order of time and subjects set forth in the following tables, and the number of marks assigned to each subject shall be as therein specified:—

Branch i.

Days.	Hours.	Subjects.	Marks.
First day	10—1	Pure Mathematics	150
	2—5	Applied Mathematics	150
Second day	10—1	Pure Mathematics	150
Third day	10—1	Applied Mathematics	150
Fourth day	10—1	Pure Mathematics	150
	2—5	Applied Mathematics	150
Fifth day	10—1	Optional Subject	200
Sixth day	10—1	Do.	200
Total			1,300

Branch ii.

First day	10—1	Properties of Matter	120
	2—5	Heat and Sound	120
Second day	10—1	Sound and Light	120
	2—5	Magnetism and Electricity	120
Third day	10—1	Optional Subject	120
	2—5	Chemistry	100
Fourth day	10—4	Practical Examination in Chemistry	100
Fifth and sixth days	10—4	Practical Examination in Physics	400
		Laboratory note-books in Physics	200
Total			1,400

Branch iii.

First day	10—1	Chemistry	125
	2—5	Do.	125
Second day	10—1	Do.	125
	2—5	Do.	125
Third day	10—1	Optional Subject	100
	2—5	Physics	100
Fourth day	10—4	Practical Examination in Physics	100
Fifth, sixth and seventh days	10—4	Do. in Chemistry	400
		Laboratory note-books in Chemistry	200
Total			1,400

Branches—iv Botany, v Zoology and vi Geology

(as main subject).

Days.	Hours.	Subjects.	Marks.
First day	10—1	Written Examination—I	150
	2—5	Do. II	150
Second day	10—1	Do. III	150
	2—5	Do. IV	150
Third day	10—1	Practical Examination—I	100
	2—5	Do. II	100
Fourth day	10—1	Do. III	100
	2—5	Laboratory note-books	100
Fifth day	10—1	Special Subject in Botany	100

Total Botany ... 1,100

Total Zoology and Geology ... 1,000

The examination in the subsidiary subjects, in the case of candidates taking branches iv, v or vi, will be at the times prescribed for the B.Sc. Degree.

FORMS OF CERTIFICATE.

B.Sc. DEGREE EXAMINATION.

I certify that has attended the course of instruction in English at the College for three-fourths of the number of working days in the year and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that has attended the course of instruction in at the College for three-fourths of the number of working days in the year and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that has attended the course of instruction in at the College for three-fourths of the number of working days in the year and that his progress and conduct have been satisfactory, and that he has completed the course of study prescribed for the B.Sc. Degree examination.

(Signature)

Principal.

* I certify that has attended the course of practical instruction in for the B.Sc. Degree Examination at the during the year

(Signature)

Professor or Lecturer.

I certify that has attended the course of practical instruction in for the B.Sc. Degree Examination at the during the year and that he has satisfactorily completed the course.

(Signature)

Professor or Lecturer.

I certify that has attended the course of practical instruction in for the B.Sc. Degree Examination at the during the year and that he has satisfactorily completed the course.

(Signature)

Professor or Lecturer.

B.Sc. (HONOURS) DEGREE EXAMINATION.

Preliminary (English Language).

I certify that has attended the course of instruction in English at the College during the year and that his progress and conduct have been satisfactory, and that he has completed the course of study prescribed for the Preliminary Examination in English for the B.Sc. (Honours) Degree.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory, and that he has completed the course of study prescribed for the B.Sc. (Honours) Degree Examination.

(Signature)

Principal.

* I certify that.....has attended the course of practical instruction in.....for the B.Sc. (Honours) Degree Examination at the.....during the year.....

(Signature)

Professor or Lecturer.

* I certify that.....has attended the course of practical instruction in.....for the B.Sc. (Honours) Degree Examination at the.....during the year.....

(Signature)

Professor or Lecturer.

I certify that.....has attended the course of practical instruction in.....for the B.Sc. (Honours) Degree Examination at the.....during the year.....and that he has satisfactorily completed the course.

(Signature)

Professor or Lecturer.

Regulation for the Degree of Master of Science.

A graduate Bachelor of Science of this University, or the holder of Science degree of another University accepted by the Syndicate as equivalent thereto, will be eligible for the degree of Master of Science on payment of a fee of one hundred rupees, provided he produces satisfactory evidence that he has worked for not less than one year, after passing the B.Sc. (Honours) or equivalent examination, under the direction of a Professor in an affiliated college or other person approved by the Syndicate, and has submitted a thesis of original work done, which is approved by each of three independent judges nominated by the Syndicate.

F. DEWSBURY,
Registrar.

(ii)

UNIVERSITY OF MADRAS.

Resolution adopted by the Senate at its meeting held on October 19, 1917.

(1) That in Regulation 99 after the word 'Arts' the words 'and Science' be inserted, and that a similar insertion be made after the words 'Arts' in Regulations 71, 87, 106, 116, and 117.

(2) (a) That in Regulation 179, for the words 'the Intermediate Examination in Arts' the words 'the Intermediate Examination in Arts and Science' be substituted; and that a similar substitution be made throughout the Regulations wherever the words 'Intermediate Examination in Arts' appear.

(2) That in Regulation 180, after the words 'affiliated in Arts' the words 'or Science' be inserted.

(3) That in Regulations 218 and 222 after the words 'Bachelor of Arts' the words 'or Bachelor of Science' be inserted.

(4) That the new courses in Science come into operation from July, 1919.

* These will not be required in the case of Mathematics.

(5) That, to allow of common papers being set for both the B.A. & B.Sc. Degree Examinations in as many subjects as possible, the following sentence be added to Regulation 196:—

'In the case of Part II of the examination the date of the first day of the examination in each of the optional groups shall be determined annually by the Syndicate and shall be notified in the Gazette in the month of February.'

(6) (a) That in Regulation 198, under 'II. One of the following branches of knowledge'

ii. Physical Science—either ii-A or ii-B.

iii. Natural Science.

be deleted and that the remaining branches be renumbered.

(b) That in Regulation 201, in the last sentence, the words 'and if he appears for the examination . . . B.A. Degree Examination' be deleted.

(c) That in Regulation 207, the syllabuses under

ii-A. Physical Science.

ii-B. Physical Science.

iii. Natural Science.

be deleted and that the remaining subjects and syllabuses be renumbered.

(d) That in Regulation 208, the time-tables for Branch ii-A, Branch ii-B and Branch iii be deleted, and that the remaining Branches and time-tables be renumbered.

(e) That in Regulation 209, the divisions of examination under Branch ii and Branch iii be deleted and that the remaining branches and divisions be renumbered.

F. DEWSBURY,
Registrar.

II

Memorandum No. 1372/B-1, Home (Education), dated 1st December 1917.

With reference to his letter No. 8018, dated the 3rd November 1917, the Registrar, University of Madras, is requested to state when a copy of the protest and of the reply memorandum thereto may be expected to be received at the Government Office.

(By order.)

C. RAMANUJA ACHARIYAR,
Registrar.

To the Registrar, University of Madras.

III

Letter—from F. DEWSBURY, Esq., B.A., LL.B., Registrar, University of Madras.

To—the Secretary to Government, Home (Education) Department.

Dated—Senate House, the 11th December 1917.
No.—9089.

With reference to paragraph 2 of my letter No. 8018, dated the 3rd November last, I have the honour, by direction, to submit, for the consideration and orders of Government, the accompanying protest lodged by Mr. P. V. Seshu Ayyar under Regulation 64 against the Resolution of the Senate passed on 19th October 1917 providing for the deletion of Physical Science and Natural Science from the list, in Regulation 198-II, of branches of knowledge to be taken by B.A. (Honours) candidates, as well as the memorandum in support of the Senate's resolution prepared by Messrs. R. Littlehales, P. F. Fyson and J. L. Simonsen, the three members of that body duly elected for the purpose.

ENCLOSURES

(i)

UNIVERSITY OF MADRAS.

The following protest lodged by Mr. P. V. Seshu Ayyar, under Regulation 64, against the Resolution of the Senate passed at its meeting held on 19th October 1917, adopting alterations in the Regulations relating to the deletion of Physical Science and Natural Science from the list of branches of knowledge to be taken by candidates for the B.A. (Honours) Degree, is in accordance with the same Regulation, circulated to each member of the Senate who was present at the meeting, with a request that he will record a vote for three members of the Senate to form a Committee to prepare a memorandum in support of the Resolution. It is requested that the votes may be returned so as to be received by the Registrar not later than 12th November 1917.

(By order)

SENATE HOUSE,
2nd November 1917.

F. DEWSBURY, B.A., LL.B.,
Registrar.

TRIPPLICANE, MADRAS,
20th October 1917.

To

THE REGISTRAR,
University of Madras.

SIR,

With reference to the Resolutions (1) prescribing a time limit (viz., four years) within which one should appear for the B.Sc. (Honours) Degree Examination after passing the Intermediate Examination and (2) omitting Physical Science and Natural Science altogether from the B.A. (Honours) Degree Examination, passed at yesterday's meeting, I beg to hereby give notice that I intend lodging protests under Regulation 64 against those resolutions.

I have the honour to be,

Sir,

Your most obedient servant,
P. V. SESHU AYYAR.

TRIPPLICANE, MADRAS,
24th October 1917.

To

THE REGISTRAR,
University of Madras.

SIR,

With reference to the Resolution XI-iii (2) relating to the dropping of Physical Science and Natural Science from the list of branches of knowledge to be taken by B.A. (Honours) candidates, which was passed at the meeting of the Senate held on 19th October 1917, I have the honour to lodge the accompanying protest under Regulation 64 of the University of Madras. The notice of my intention to lodge such a protest I have already given within the time prescribed in the same Regulation.

I have the honour to be,

Sir,

Your most obedient servant,
P. V. SESHU AYYAR.

(ii)

A protest against Resolution XI-iii (2) of the agenda passed at the Senate meeting held on 19th October 1917.

The Resolution is that "Physical Science—either II-A or II-B—and Natural Science be deleted" from the list of branches of knowledge under the B.A. (Honours) Regulations.

The following are the chief objections to the passing of the Resolution (the objections apply mainly to the "dropping" of Physical Science and not to the same extent to that of Natural Science):

1. The time from which the Resolution is to take effect is not mentioned. In the absence of such specific mention it may be taken to come to effect immediately, in which case, it is needless to say that there will be no Physical Science or Natural Science for the Honours Examination until the B.Sc. (Honours) Examination gets instituted, i.e., till April 1922.

2. The only reason that was assigned for the dropping of these subjects from B.A. (Honours) courses was that the B.Sc. (Honours) courses, specially in Physical Science, are exactly the same as those for the B.A. (Honours) courses and that it is meaningless to have two degrees for one and the same course. This reason is quite sound and one would readily accept the dropping of these sciences from the B.A. (Honours), provided all the Regulations affording facilities for higher studies in connexion with the B.A. (Honours) and M.A. Degrees had also been incorporated with the B.Sc. and M.Sc. Regulations. One such Regulation that has not been so incorporated is Regulation No. 210 (B) which enables a graduate of arts in Physical Science or Natural Science to appear for the B.A. (Honours) Degree Examination in these Sciences and qualify for a higher degree, viz., M.A. (without Honours). The absence of such a provision in the proposed B.Sc. or M.Sc. Regulations makes it impossible for any pass graduate to qualify for a higher degree. As the chief aim of a University is to encourage learning in every way and as it is desirable to create free scope and facilities for all students of capacity to proceed from the lowest to the highest standard of education, the want of such facilities in the B.Sc. (Honours) Regulation must be deplored. And so long as such want remains the Physical Science courses

under the B.A. (Honours) Regulations including M.A. (without Honours) which contain such facilities should not be dropped. That such facilities to qualify for a higher degree are being availed of could be seen from the fact that in the two years 1916 and 1917 during which the Regulation for M.A. (without Honours) has been in force, five candidates applied for the examination in these Sciences and two of them got through; and it seems that for the examination of 1918 so many as eight have applied for M.A. (without Honours) in the "Science subjects".

3. There are many colleges which are now affiliated in Physical Science under the B.A. (Pass) degree and students who passed the B.A. in Physical Science from such colleges could, under Regulation 201, qualify themselves to appear for the B.A. (Honours) Degree Examination in Physical Science and if Physical Science be dropped from the B.A. (Honours) Regulations such students with Physical Science for their subject will have no chance of qualifying for a higher degree, since there is no provision in the B.Sc. (Honours) Regulations allowing such students to appear after a two years' course for the B.Sc. (Honours) Examination. Thus if the Sciences be dropped from the B.A. (Honours) without making a provision as suggested above, such students will be deprived of the facilities they now have for qualifying for a higher degree. The result will be that ambitious students will be unwilling to take up Sciences for their B.A. and consequently also such colleges as are now affiliated in Physical Science for the B.A. will not attract good students. It may be contended that such colleges may seek affiliation for the B.Sc. in the Sciences where such facilities are provided for. But many of these colleges cannot afford, at any rate in the near future, to seek affiliation for the B.Sc., since three separate branches of knowledge are to be offered for the B.Sc. Pass. This inability on the part of such colleges to seek affiliation for the B.Sc. was well brought out at the meeting of the Senate held in October 1916, when it was proposed to drop these Sciences altogether from the B.A. (Pass) Degree; and for that very reason that proposition was lost.

These objections were raised at the Senate meeting and it was suggested that the matter might be referred to the Syndicate. But since the proposal went in the name of the Committee appointed to draft the B.Sc. Regulations, it was presumed that the Committee must have fully considered all such objections and a reference to the Syndicate was considered unnecessary. But this question of dropping the Sciences from the B.A. (Honours) Courses was not included in the terms of reference to that Committee nor was it in the agenda for the meeting of the Committee at which the draft Regulations for the B.Sc. were discussed and adopted. The question was raised incidentally by some members of the Committee and the proposal was adopted in haste though it was pointed out even then that the question required further consideration since nobody could say on the spur of the moment how far the existing B.A. (Honours) and M.A. Regulations conformed to or clashed with the proposed B.Sc. and M.Sc. Regulations. That the proposal must have been adopted in haste could be seen from the fact (1) that the time from which it is to take effect is not specified, (2) that out of the eleven amendments moved in connexion with the B.Sc. (Honours) Regulations, eight were accepted; and had it not been for these accepted amendments the proposed Regulations for the B.Sc. (Honours) would have been wanting in clearness and completeness.

It will, therefore, be seen that the proposal to drop these sciences from the B.A. (Honours) Course was not well considered either by the Committee or by the Senate; and since the B.Sc. Regulations have to take effect only from July 1919, there is no need for hurry in passing this resolution which after all has nothing directly to do with the B.Sc. Regulations. The Resolution is, therefore, one which might well be sent back for reconsideration by the Senate in the light of the above objections.

26th October 1917.

P. V. SESHU AYYAR.

(iii)

Memorandum prepared by the Committee of three members of the Senate elected under Regulation 64, in reply to the protest lodged by Mr. P. V. Seshu Ayyar against Resolution XI (iii) (2) of the agenda passed at the meeting of the Senate held on 19th October 1917 relating to the deletion of Physical Science and Natural Science from the list of branches of knowledge to be taken by B.A. (Honours) candidates.

At a meeting of the Senate held on 22nd July 1916, Mr. P. F. Fyson moved and the Rev. A. Moffat seconded: "That Regulation 187 be added, at the end, the words 'or Bachelor of Science Degree Examination or Bachelor of Science (Honours) Degree Examination.' This motion was equivalent to a proposal for the institution of a B.Sc. course. As an amendment Lt.-Col. A. Miller moved and Dr. J. L. Simonsen seconded that a Committee of sixteen members of the Senate be appointed to consider and report upon the advisability of instituting a Faculty of Science and a B.Sc. Degree, the general nature of the course of study for this degree, and to submit proposals regarding the suggested Faculty of Science and B.Sc. Degree, should the Committee consider it advisable to do so." Three additional members were added to the Committee making nineteen in all and the amendment was accepted by the Senate.

The Committee met on 11th and 24th August 1916 and adopted certain resolutions contained in the annexure hereto. It presented its report to the Senate on 27th October 1916 when the latter body adopted all but one of twelve resolutions based upon the report, the resolution rejected being that for the abolition of the experimental Sciences in the courses for the B.A. Degree and re-appointed the Committee to draft the necessary regulations in accordance therewith and to report to a future meeting of the Senate. The final report was submitted to the Senate at its meeting held on 19th October 1917. It is against one of the resolutions that was adopted by the Senate on the basis of this report that Mr. Seshu Ayyar protests. The resolution reads as follows:—

(a) That in Regulation 198, under 'II. One of the following branches of knowledge,'

(ii) Physical Science—either ii-A or ii-B.

(iii) Natural Science

be deleted and that the remaining branches be renumbered.

(b) That in Regulation 201, in the last sentence, the words 'and if he appears for the examination . . . B.A. Degree Examination' *be deleted.*

(c) That in Regulation 207, the syllabuses under

ii-A. Physical Science

ii-B. Physical Science

(iii) Natural Science,

be deleted and that the remaining subjects and syllabuses be renumbered.

(d) That in Regulation 208, the time-tables for Branch ii-A, Branch ii-B and Branch iii *be deleted*, and that the remaining branches and time-tables *be renumbered.*

(e) That in Regulation 209, the divisions of examination under Branch ii and Branch iii *be deleted* and that the remaining branches and divisions *be renumbered.*

The resolution is that Physical Science (Physics and Chemistry) and Natural Science (Botany, Zoology, Geology and Physiology) *be omitted* from the B.A. (Honours) course and examination, the ground for omission being that provision for the study of these subjects up to an Honours standard is proposed in the B.Sc. regulations.

Mr. Seshu Ayyar's protest is based on the following three main grounds:—

(1) The time from which the resolution is to take effect is not mentioned.

(2) All the regulations affording facilities for higher studies in connexion with the B.A. (Honours) and M.A. degrees have not been incorporated with the B.Sc. and M.Sc. regulations.

(3) No provision is made for students who take the Pass B.A. degree with Physical or Natural Science as optional subjects, qualifying for a higher degree with Science as their special subjects.

He raises the subsidiary objection that these resolutions bearing on the B.Sc. course were not sufficiently well considered by either the committee appointed by the Senate or the Senate itself.

It may be stated at the outset that the committee had in view, when making its recommendations to the Senate, mainly the institution of a B.Sc. course. It was informed that the existing regulations of the University regarding the award of M.A. and M.A. (Honours) degrees were under the consideration of the Syndicate. It did not therefore feel itself called upon to enter into the exceptional cases of transfers of students from a B.A. course in the experimental Sciences to a B.Sc. course or from a B.Sc. course to a B.A. course. It recognized that any suggestion on these lines would be dependent upon the decision of the Syndicate regarding the future of the M.A. and the M.A. (Honours) degrees. That decision has not yet been arrived at and is, we understand, unavoidably postponed pending orders from the Government upon the resolution under protest. The committee recognized that even after the acceptance of its proposals by the Senate additional regulations would be required, some of them temporary, others permanent, in order to make provision for difficulties of interpretation and for cases of a more or less abnormal character which might subsequently arise. Many members of the Senate were of opinion that these defects could and would be remedied by the Syndicate when it considered, as it was bound to consider, the resolutions accepted by the Senate and approved by the Government.

Treating Mr. Seshu Ayyar's objections seriatim, the first is purely technical. It is natural and imperative that such students as have entered upon the B.A. (Honours) course should be given facilities for the completion of that course. Such provision can be made, as it has already been made, when circumstances similar to these under consideration have arisen, by the introduction of Transitory Regulations, provision therein being made for the continuance of the B.A. (Honours) courses in Science until students who began their course in 1918 have completed it.

The second ground for the protest is, really, an objection to an entirely different resolution from the one under discussion and which was also accepted at the last meeting of the Senate, viz., that resolution which accepted the proposed regulations regarding the institution of a degree of Master of Science. Under these regulations the M.Sc. degree is to be awarded to a

student who has passed the B.Sc. (Honours) examination, who has worked under supervision for an additional year and who has submitted a satisfactory thesis on original work done. It is therefore essentially different from the M.A. (Honours) degree which is awarded at a Convocation to any one who has passed the B.A. (Honours) degree examination and who after a certain period of time pays the prescribed fee to the University. The M.A. (Honours) degree is awarded without examination or further study. The M.Sc. degree is to be awarded only after further study and submission of a thesis on original work which has been done in the meantime. There is thus no true analogy between the M.Sc. degree and the M.A. degree in Honours. Mr. Seshu Ayyar appears to presume that there ought to be. If students who take the B.Sc. pass degree are desirous of qualifying for the M.Sc. degree they might be permitted to do so by first appearing for the B.Sc. (Honours) examination and if they satisfy the examiners they may then study under supervision for an additional year and submit a thesis on the original work done by them. This is a matter which might well be left to the consideration of the Syndicate which could submit to the Senate any additional regulation required to permit of this being carried into effect. The number of persons who will be affected by such a regulation will be almost negligibly small and it is doubtful whether Mr. Seshu Ayyar would accept such a solution if further attendance at a college were required. Yet such attendance would be a requisite for any successful appearance at a Honours Examination in Science. This difficulty, it is understood, is engaging the attention of the Syndicate in connexion with proposals for an M.A. degree.

The retention of experimental Sciences in the B.A. degree courses was not originally contemplated by the committee, which had in view a complete course in the sciences up to an M.Sc. standard in which a B.A. degree course in Science could find no proper place. The Senate decided, however, that the sciences should be retained in the Arts course. It is admitted that such retention must be followed by suitable provision for higher studies in Science by Bachelors of Arts, but such provision should not be subversive of sound progressive B.Sc., B.Sc. (Honours) and M.Sc. courses. Mr. Seshu Ayyar's third objection therefore is one which can and ought to be met by the passing of a further regulation, e.g., one which would permit students who have obtained a B.A. degree with Science as their optional subject taking a B.Sc. (Honours) course in two years after taking their B.A. pass course and thus qualifying for the B.Sc. degree in addition to the B.A. degree. This again is a matter for the consideration of the Syndicate.

The subsidiary objection raised by Mr. Seshu Ayyar is one that can be raised to practically every body of regulations which has ever been passed. In fact the existing regulations of this University are considered to be so defective that a committee of the Syndicate is now sitting for the purpose of revising them *in toto*. It may be noted that Mr. Seshu Ayyar gave notice of fourteen amendments on the B.Sc. course—seven were accepted as merely verbal or consequential alterations, one was not moved by him, another was moved and then withdrawn, four were moved and lost, and one was moved and carried.

There are various other aspects of these regulations which must be considered very shortly. One which has not heretofore been mentioned is whether under any circumstances a Pass B.Sc. may take up a B.A. (Honours) degree course. In Mathematics it seems more than probable that this should be permitted. There is also the question of whether Pass B.A.'s who cannot afford an additional two years' college course should be allowed to appear for the B.Sc. or (as already suggested) the B.Sc. (Honours) examination, as they are now allowed to appear for the B.A. (Honours) examination as a qualification for the M.A. degree without honours. These are, however, subsidiary questions and do not affect the main provisions relating to the institution of the B.Sc. course and degree and might well be considered apart from the present resolutions of the Senate.

Finally we wish to emphasize that the committee of the Senate set itself out to draw up courses of study in Science which while being educationally and scientifically sound would qualify the student to take up his position as a useful citizen endowed with such training as would enable him to attack successfully and profitably life's future problems. It has done so and its proposals have been almost *en bloc* accepted by the Senate.

We suggest therefore that the orders of Government be issued sanctioning the changes in the regulations which have been accepted by the Senate as consequential on the institution of a B.Sc. course and degree. The Syndicate will then be in a position to consider in greater detail than has yet been possible the relation of the B.A. to the B.Sc. courses and examinations, to draft such additional regulations as may be necessary and to submit them to the Senate for approval, a function of the Syndicate that is specifically referred to in Regulation 96 (viii) of the Madras University Regulations. It does not appear to be profitable to proceed further in suggesting alterations in and additions to the regulations until the orders of Government issue on the main question, viz., the institution of a B.Sc. course.

R. LITTLEHAILES,

P. F. FYSON,

J. L. SIMONSEN,

IV

Memorandum No. 1372/B-3, Home (Education), dated 11th January 1918.

The Government consider that they should have the transitory and other regulations contemplated in the reply memorandum of the Senate Committee submitted with the Registrar's second letter read above before orders can be passed on the present regulations.

2. The Syndicate is accordingly requested to be so good as to expedite the framing and submission of the consequential additions to and alterations in the regulations.

R. RAMACHANDRA RAO,
Secretary to Government.

To the Registrar, University of Madras.

V

Letter—from F. DEWSBURY, Esq., B.A., LL.B., Registrar, University of Madras.

To—the Secretary to Government, Home (Education) Department.

Dated—Senate House, the 22nd March 1918.

No.—2060.

With reference to Government Memorandum No. 1372 B-3, dated the 11th January 1918, and the previous correspondence, I have the honour, by direction of the Syndicate, to forward for the sanction of Government under section 25 (1) of the Indian Universities Act, 1904, the enclosed Transitory Regulation, additional regulations, and alteration in the existing Regulation 207—all relating to the proposed courses and degrees in Science—which were adopted by the Senate at its adjourned meeting held on 9th March 1918.

The Transitory Regulation makes provision for the continuance of the B.A. Degree (Honours) examinations in Science only until the new courses and examinations for degrees in Science have come into full operation. The additional regulations provide for Bachelors of Science proceeding later to a higher degree, for Bachelors of Arts proceeding to Science degrees and for Bachelors of Science proceeding to an Arts degree in Mathematics. The proposed alteration in Regulation 207 was referred by the Senate in October last to the Board of Studies in Mathematics for consideration and report. The Board of Studies approved the proposal which removes from the Arts Honours course in Mathematics the options in Applied Mathematics, which will find place in the proposed new B.Sc. (Honours) course, as soon as the latter comes into operation.

ENCLOSURE

UNIVERSITY OF MADRAS.

Resolutions adopted by the Senate at its adjourned meeting held on March 9, 1918.

(a) That the following Transitory Regulation in connexion with the proposed courses and degrees in Science be adopted:—

The examination for the Degree of Bachelor of Arts (Honours) in branches (ii) and (iii) shall be held under the existing regulations in the years 1919, 1920, 1921 and 1922: after the year 1922 the examinations in those branches shall cease, except that an examination shall be arranged, if required, in the year 1923 for candidates appearing in those branches, who have enlisted in the Indian Defence Force and who passed the Intermediate Examination in Arts in the year 1918.

(b) That the following additional regulation in connexion with the proposed courses and degrees in Science be adopted:—

(i) Candidates for degrees in Science who have already qualified for a degree shall be permitted to appear for the examinations in Science under the conditions following:—

(a) A candidate who has qualified for the Degree of Bachelor of Science and desires to qualify for the degree of Master of Science shall be permitted to appear at any time for the examination held for candidates from the degree of Bachelor of Science (Honours) after a two years' course and shall be exempted from re-examination in English and in any subsidiary

subject in which he has qualified for the Degree of Bachelor of Science; in such subsidiary subjects he shall be credited with the percentage of marks obtained in those subjects in the Degree of Bachelor of Science examination.

(b) A candidate who has qualified for the Degree of Bachelor of Arts in Group (i), (ii-A), (ii-B) or (iii) shall be permitted to appear for the Degree of Bachelor of Science (Honours) examination after a two years' course, provided he presents himself for examination in the subjects in which he has already qualified himself for the Degree of Bachelor of Science he shall be exempted from re-examination in English and in the case of Branch (ii) or Branch (iii) from re-examination in Chemistry or Physics respectively, taken as subsidiary subjects, and in the case of Branches (iv), (v) and (vi) from re-examination in any subsidiary subjects in which he may have qualified as his main subject in the Degree of Bachelor of Science examination. He shall be credited in each subsidiary subject in which he is exempted with the percentage of marks gained in that subject in the Degree of Bachelor of Science examination.

Such a candidate appearing in Branch (iv), (v) or (vi) shall be permitted to appear in the same year both for his main subject and for his subsidiary subject or subjects in which he is not exempted from re-examination under this Regulation;

A candidate who, under this Regulation, passes the Degree of Bachelor of Science (Honours) examination within four years of passing the Intermediate Examination shall be eligible for the Degree of Bachelor of Science (Honours). A candidate who under this Regulation passes the examination after the expiry of four years from the date of passing the Intermediate examination shall be eligible to qualify for the Degree of Master of Science.

(c) A candidate who has qualified for the Degree of Bachelor of Science in Group (i), (ii-A), (ii-B) or (iii) shall be permitted to appear for the Degree of Bachelor of Science examination in any three subjects after a one year's course, provided he presents himself for examination in the subjects in which he has already qualified himself for the Degree of Bachelor of Science. He shall be exempted from re-examination in English and from re-examination in the main subject in which he qualified himself for the Degree of Bachelor of Science; in the latter subject he shall be credited with the percentage of marks gained in the Degree of Bachelor of Science examination.

(d) A candidate who has qualified for the B.A. Degree in a group other than Group (i), (ii-A), (ii-B) or (iii) shall be permitted to appear for the B.Sc. Degree Examination after a two years' course; he shall be exempted from re-examination in English.

(ii) Candidates for Degrees in Arts, who have already qualified for a degree in Science, shall be permitted to appear for the B.A. (Honours) Degree Examination under the condition following:—

A candidate who has qualified for the Degree of Bachelor of Science with Mathematics as one of his subjects shall be permitted to appear for the B.A. (Honours) Degree Examination in Branch (i)—Mathematics after a two years' course and shall be exempted from re-examination in English.

(iii) Each candidate for an examination under the foregoing provisions shall forward by the dates specified in the Regulations for that examination his application for admission, and certificates of attendance for the period above prescribed from the head of an affiliated college to the effect that he has completed the course of instruction in the subjects in which he proposes to appear and that his conduct and progress have been satisfactory.

Forms of Certificates—

Regulation (b) (i) (a) and (b) above. The certificates prescribed for the second and third years of the B.Sc. (Honours) Degree courses;

Regulation (b) (i) (c) above. The certificates prescribed for the third year of the B.Sc. Degree courses.

Regulation (b) (i) (d) above.—The certificates prescribed for the second and third years of the B.Sc. Degree courses.

Regulation (b) (ii).—The certificates prescribed for the second and third years of the B.A. (Honours) Degree courses.

(c) That in Regulation 207, under (i) Mathematics (c), the optional subjects Nos. 6 to 11 be deleted, and the remaining subject be re-numbered with effect from the examination of the year 1922.

F. DEWSBURY,
Registrar.

Order—No. 515, Home (Education), dated 23rd April 1918.

Under section 25 (1) of the Indian Universities Act, 1904, the Government sanction the regulations for the institution of a Faculty of Science and Degrees in Science together with the alterations in the existing regulations submitted with the

Registrar's letter No. 8018, dated the 3rd November 1917. The consequential transitory and other regulations relating to the proposed courses and Degrees in Science submitted with the Registrar's letter No. 2060, dated the 22nd March 1918, are also sanctioned.

(True extract)

R. RAMACHANDRA RAO,
Secretary to Government.

To the Registrar, University of Madras.
Copy to the Director of Public Instruction,
Editors' Table.

NOTES CONNECTED WITH G.O. No. 515, HOME (EDUCATION),
DATED 23RD APRIL 1918

[SUBJECT.—University regulations relating to the institution of a faculty of Science and a B.Sc. degree.]

From the Registrar, University of Madras, No. 8018, dated 3rd November 1917.

HOME (EDUCATION) DEPARTMENT.

Submitted that the case may lie over pending receipt of the protest and the reply memorandum referred to in paragraph 2 of the Registrar's letter.

E.A.V.—8-11-17.

T.K.—9-11-17.

C. RAMANUJA ACHARIYAR—10-11-17.

Remind on 28th November.

R. RAMACHANDRA RAO—12-11-17.

A draft memorandum is submitted.

E.A.V.—30-11-17.

T.K.—30-11-17.

C.R.—1-12-17.

[Memorandum No. 1372/B-1, dated 1st December 1917.]

From the Registrar, University of Madras, No. 9089, dated 11th December 1917.

The Syndicate submits for the sanction of Government under section 25 (1) of the Indian Universities Act—(i) a new body of regulations providing for courses of study and examinations necessitated by the proposed institution of a Faculty of Science and a B.Sc. Degree in the Madras University and (2) alterations in the existing regulations, for the most part, consequential.

2. There does not appear to be any objection in accepting the regulations in (1). In regard to the alterations in (2) however, Mr. P. V. Seshu Ayyar, Professor of Mathematical Physics at the Presidency College and a member of the Senate, has lodged a protest against the resolution of the Senate providing for the deletion of Physical Science—either II A or II B—and Natural Science from the list in Regulation 198 II to be taken by B.A. (Honours) candidates. For facility of reference the statement prepared and submitted below exhibits in one view the

* Prepared by a Senate Committee appointed under Regulation 64 and composed of Messrs. R. Littlehales, P. F. Fyson and J. L. Simonsen.

Points of objection in the protest against the Senate Resolution.

(1) The time from which the resolution is to take effect is not mentioned and in the absence of such specific mention, it may be taken to come to effect immediately in which case there will be no Physical Science or Natural Science for the (Honours) examination until the B.Sc. (Honours) Examination gets instituted, i.e., April 1922.

objections raised in the protest and the arguments in the reply* memorandum urged in support of the resolution under protest :—

Arguments in the reply memorandum in support of the Senate Resolution.

(The defect appears to be admitted). Nevertheless it is argued that it is a technical objection which can be cured by the introduction of transitory regulations providing for the continuance of the B.A. (Honours) courses in Science until students who begin their courses in 1918 have completed it.

Points of objection in the protest against the Senate Resolution.

(2) That all the regulations affording facilities for higher studies in connexion with the B.A. (Honours) and M.A. Degrees have not been incorporated with the B.Sc. and M.Sc. regulations.

(3) No provision is made for students who take the pass B.A. Degree in Physics or Natural Science as optional subjects qualifying for a higher degree with Science as their special subject.

(4) A subsidiary objection that these resolutions bearing on the B.Sc. course were not sufficiently well considered either by the Senate Committee or the Senate itself.

3. It is evident from the foregoing summary that practically every objection taken by Mr. Seshu Ayyar has been accepted. The Committee who have prepared the reply memorandum however suggest that the orders of the Government be issued sanctioning the present regulations and that the Syndicate may be left to frame such additional regulations as may be found necessary and to submit them to the Senate for approval—a function of the Syndicate that is specifically referred to in Regulation 96 (viii) of the University Regulations.

4. The case may now be forwarded to the Director of Public Instruction u.o. for remarks generally on the proposed regulations and particularly with reference to the suggestion at A above.

E.A.V.—18-12-17.

T.K.—22-12-17.

To the Director of Public Instruction u.o. first for favour of remarks.

C. RAMANUJA ACHARIYAR—26-12-17.

OFFICE OF THE DIRECTOR OF PUBLIC INSTRUCTION.

I think that Government ought to have before them the transitory and other regulations necessary before they sanction the present ones. Incidentally an order to this effect would be useful in hurrying up the Syndicate.

J. H. STONE—4-1-18.

A draft memorandum in the sense of the Director of Public Instruction's note on the previous page is submitted.

E.A.V.—5-1-18.

T.K.—7-1-18.

C.R.—9-1-18.

R. RAMACHANDRA RAO—11-1-18.

[Memorandum No. 1372 B/3, dated the 11th January 1918.]

From the Registrar, University of Madras, No. 2060, dated 22nd March 1918.

Please see the transitory regulation and additional regulations now submitted by the Syndicate, so as to meet the objections of Mr. Seshu Ayyar detailed in his protest. They may be forwarded to the Director of Public Instruction u.o. for remarks with reference to his note, dated 4th January 1918 on page 2 supra.

P.R.—5-4-18.

T.K.—6-4-18.

C. RAMANUJA ACHARIYAR—8-4-18.

OFFICE OF THE DIRECTOR OF PUBLIC INSTRUCTION.

The new regulations serve their intended purpose and may be accepted.

J. H. STONE—11-4-18.

HOME (EDUCATION) DEPARTMENT.

A draft order sanctioning the regulations is submitted.

E.A.V.—16-4-18.

T.K.—16-4-18.

C.R.—16-4-18.

For sanction.

R. RAMACHANDRA RAO—18-4-18.

P[ENTLAND]—22-4-18.

Issue.

R.R.—22-4-18.

[G.O. No. 515, Home (Education), dated 23rd April 1918.]

1918.

Home (Govt)

DEPARTMENT.

CUTTINGS FROM NEWSPAPERS.

1. Name of Paper— *The Hindu*2. Published at— *Madras*3. Dated— *11-3-18*

DEGREES IN SCIENCE.

The following recommendation of the Senate Committee on Courses and Degrees in Science which was placed before the Senate at its meeting held on October 19, 1917, was referred by the Senate to the Board of Studies in Mathematics for report.

That in Regulation 207 under i. Mathematics (c), the optional subjects numbers 6

to 11 be deleted and that the remaining optional subject be re-numbered.

The Syndicate placed before the Senate the following resolutions on this subject adopted by the Board:

(i) That, on condition that the B.Sc. Course is sanctioned by Government, the B.A. (Honours) Degree Course be modified so as to include under Regulation 207 i (c) only Pure Mathematics subjects, viz Nos. 1, 2, 3, 4, 5, and 12.

(ii) That, if the B.Sc. Course is not sanctioned by the Government, the Regulation 207 i (c) remain as at present.

The resolutions were accepted.

TRANSITORY AND ADDITIONAL REGULATIONS.

Mr. R. Littlehales moved:—

(a) That the following Transitory Regulation in connection with the proposed courses and degrees in Science be adopted:—

The examination for the Degree of Bachelor of Arts (Honours) in Branches ii and iii shall be held under the existing Regulations in the year 1919, 1920, 1921 and 1922; after the year 1922 the examinations in those Branches shall cease, except that an examination shall be arranged, if required, in the year 1923 for candidates appearing in those Branches who have enlisted in the Indian Defence Force and who passed the Intermediate Examination in Arts in the year 1918, and (b) That the following additional Regulation in connection with the proposed courses and degrees in Science be adopted:—

(c) Candidates for degrees in Science who have already qualified for a degree shall be permitted to appear for the examinations in Science under the conditions following:—

(a) A candidate who has qualified for the Degree of Bachelor of Science shall be permitted to appear for the B. Sc. (Honours) Degree Examination after two years' course and shall be exempted from re-examination in English and in any subsidiary subject in which he has qualified for the Degree of Bachelor of Science; in such subsidiary subjects he shall be credited with the percentage of marks obtained in those subjects in the B. Sc. Degree Examination.

Rev. A. Moffat seconded the motion.

Mr. Littlehales accepted all the amendments of Mr. P. V. Seshu Iyer.

1917.

Home DEPARTMENT.

CUTTINGS FROM NEWSPAPERS.

1. Name of Paper--

2. Published at--

3. Dated--

B. SC. AND B.A. DEGREE COURSES.

The report of the Committee of the Senate appointed to draft regulations providing for courses of study and examinations in science, that it would not be possible for instruction being given in science subjects both for the B.Sc. and the B.A. Degree courses in the same college without considerable increase in staff and accommodation, was recorded.

On the motion of Dr. J. L. Simonsen seconded by Professor Fyson alterations were made in Regulations 71, 87, 99, 106, 116, 117, 179 and 180 introducing the word "Science" everywhere.

Certain regulations for the B.Sc. to B.Sc. (Honours) and M. Sc. Degrees in accordance with the general principles adopted by the Senate at the last meeting were moved by Dr. Simonsen. He said that there were not many points on which controversy was likely to arise and that Mr. Seshu Aiyar might bring his amendments before the Board of Studies first and then before the Senate at the next meeting.

Draft Regulations 1 to 10 were carried unopposed.

Dr. Simonsen moved Draft Regulation 11 which ran thus:--

"No candidate shall be declared to have passed Part I of the examination unless he obtains not less than 40 per cent. of the total number of marks. No candidate shall be declared to have passed Part II of the examination unless he obtains not less than 40 per cent. of the total marks, and not less than 30 per cent. in each of the three selected optional branches of knowledge."

Mr. Seshu Aiyar's first amendment to change the figure 30 into 25 and his alternative amendment to insert at the end of the last sentence the words "or not less than 40 per cent. in each of the two of the three selected branches and 25 per cent. in the third" were both lost after considerable discussion.

The original resolution was put to vote and carried.

B.Sc. HONOURS COURSE AND EXAMINATIONS.

Dr. Simonsen accepted Mr. Seshu Aiyar's amendment to insert the words "in the case of students taking iv, v or vi as the main subject" before the words "shall be the same" in the Draft Regulation "The course of study in English and in the subsidiary subjects shall be the same as for the B.Sc. Pass Degree". Regulation 1 and Regulation 2 as amended were carried.

Mr. Seshu Aiyar withdrew his amendments to certain details in the Draft Regulations relating to the course of study in Mathematics as the Vice-Chancellor assured him that there was no objection to any change when the matter would come before the Board of Studies.

Draft Regulations relating to Physics, Chemistry, Botany, Zoology and Geology carried a few were put to the Senate and carried.

One of the regulations was "A candidate who is taking one of the three subjects, Botany, Zoology or Geology as his main subject may (shall be required to) appear for the examination in the subsidiary subjects at the end of the second year of the course".

Dr. Simonsen explained that the word "may" was a printer's error and the brackets must be struck off. It was not intended to be permissive.

Mr. Seshu Aiyar moved to delete the brackets and the words "shall be required to" and said that the word "may" was preferable.

Mr. K. V. Rangaswamy Aiyangar seconded the amendment.

Professor Fyson said that if they allowed three years, they would lower the standard and spoil the Honours course.

The Hon'ble Mr. J. H. Stone said that there would be some cases in which students might be legitimately allowed to appear at the end of the third year. He was very much inclined to support Mr. Seshu Aiyar's amendment. The Syndicate might grant exemptions.

The amendment of Mr. Seshu Aiyar was carried.

The next amendment of Mr. Seshu Aiyar was consequential and was accepted by Dr. Simonsen.

Dr. Simonsen also accepted another amendment of Mr. Seshu Aiyar.

Dr. Simonsen moved and Professor Fyson seconded the following regulation:--

"11 A candidate for the B.Sc. (Honours) Degree shall appear for the final examination in Part II not later than the end of the fourth year after he has passed the Intermediate Examination in Arts and Science."

Mr. Seshu Aiyar moved that the words "provided that there is no such time limit in the case of candidates who appear for the examination as provided in para 10 above," be added at the end and explained that his object was to show some difference between the B.A., Honours and B.Sc. Honours.

Mr. K. B. Ramanatha Aiyar seconded the amendment.

Mr. Mark Hunter pointed out that the time taken to take the Honours Degree was essential.

Mr. K. V. Rangaswamy Aiyangar said that the Honours test was only a time test and did not show that the candidates possessed greater ability than others who had taken the M.Sc. Degree and suggested that Mr. Seshu Aiyar might withdraw his amendment. There was not going to be a difference in standard. Mr. Mark Hunter and others wanted to use the word Honours in a technical sense.

The amendment of Mr. Seshu Aiyar was lost.

Mr. Seshu Aiyar then moved the following alternative amendment, the object of which was to give a year of grace to candidates who appeared for the B.Sc. examination (Honours.)

"That the words 'and not later than the fifth year after passing the Intermediate examination in the case of candidates who appear for the examination under the provisions of para 10 above' be added at the end."

Mr. G. A. Natesan, in seconding the amendment, said that nothing would be lost by extending the time.

Mr. K. V. Rangaswamy Aiyangar, in opposing the amendment said that the University must be consistent.

The amendment was lost and the resolution carried.

Dr. Simonsen accepted the remaining amendments of Mr. Seshu Aiyar, and the regulations as amended were carried.

Dr. Simonsen's resolution "that the new courses in science come into operation from July, 1919," was also carried.

To allow of common papers being set for both the B.A. and B.Sc. Degree examinations in as many subjects as possible, Professor Fyson moved to add to regulation 196 the following sentence:--

"In the case of Part II of the examination the date of the first day of the examination in each of the optional groups shall be determined annually by the Syndicate and shall be notified in the 'Gazette' in the month of February."

Regulation 196 runs thus:--
The examination for the degree of Bachelor of Arts shall be conducted in the order of time and subjects set forth in the following tables, and the number of marks assignable to each subject shall be as therein specified.

The motion was carried.
Professor Fyson then moved for the deletion of Physical Science and Natural Science in Regulations 198, 207, 208 and 209.

DEPARTMENT.

CUTTINGS FROM NEWSPAPERS.

1. Name of Paper--

2. Published at--

3. Dated--

Mr. Seshu Aiyar opposed the motion and moved that the matter be referred to the Syndicate for necessary action.

Mr K. B. Ramanatha Aiyar seconded the amendment.

Mr Allen opposed the amendment and said that the question had been discussed in the committee which was the proper body to deal with it.

Dr. Simonsen said that they did not want B. A. honours in Chemistry and B. Sc. Honours in Chemistry, because there would be no difference between the two.

The amendment was lost and the original proposition was carried.

Professor Fyson moved and Dr. Simonsen seconded to delete optional subjects Nos 6 to 11 in Regulation 207 under (i) Mathematics (c).

Mr B Hanumantha Row opposed it.

Mr Seshu Aiyar moved that the matter be referred to the Board of Studies in mathematics.

Mr R Swaminatha Aiyar seconded this amendment.

Mr K. V. Rangaswamy Aiyangar, supported the amendment and said that the object of Mr. Seshu Aiyar was to make the B. A. Honours Degree more coveted than the B. Sc. Degree.

Mr. Seshu Aiyar's motion was carried.

6-11-17

7.5.18 19 IL 2510
G.O. No. 515, 23rd April 1918

University Regulations

Sanctioning a new body of — for the institution of a Faculty of Science and Degrees therein.

READ--the following papers:—

Letter—from F. DEWSBURY, Esq., B.A., LL.B., Registrar, University of Madras.

To—the Secretary to Government, Home (Education) Department.

Dated—Stone House, the 3rd November 1917.

No—8018.

At its adjourned meeting held on 22nd July 1918, the Senate appointed a committee 'to consider and report upon the advisability of instituting a Faculty of Science and a B.Sc. Degree, the general nature of the courses of study for this degree, and to submit proposals regarding the suggested Faculty of Science and B.Sc. Degree, should the committee consider it advisable to do so.' This committee submitted to the Senate at its meeting held on the 27th October 1918, an interim report, in accordance with which the Senate passed the following resolutions:—

(1) That a Bachelor of Science Course and Degree be instituted.
(2) That the Final Course of study for the B.Sc. Degree shall consist of any three of the following subjects:—

Mathematics, Physics, Chemistry, Botany, Zoology and Geology, and a course in English similar to that prescribed at present for the Preliminary Honours Examination.

(3) That the Preliminary Examination in English in the B.Sc. Course may be taken at the end of the first year's course or at any time thereafter.

(4) That the subjects of the B.Sc. Course shall be of equal value and the standard in each shall be approximately the same as that of the subject taken as the main subject in the present B.A. Degree Course.

(5) That the Intermediate in Arts be called the Intermediate in Arts and Science.

(6) That the Boards of Studies concerned be requested to draw up syllabuses in the several subjects of the B.Sc. Course for the consideration of the committee.

(7) That the B.Sc. Honours Courses in Mathematics, Physics and Chemistry be identical with the B.A. Honours Courses in these subjects.

(8) That a candidate for the B.Sc. Honours Degree in Botany, Zoology or Geology shall take any one of these as his main subject and any two other subjects of the B.Sc. Course as subsidiary subjects; he shall be required to pass the B.Sc. Examination in his subsidiary subjects at the end of his second year.

(9) That the Degree of Master of Science may be conferred on any Graduate in B.Sc. Honours under the following conditions:—

(i) He shall work after graduation for not less than one year under the direction of a Professor of an affiliated college or other person approved by the Syndicate.

(ii) He shall submit a thesis of original work done which shall be approved by each of three independent judges nominated by the Syndicate.

(10) That the present Faculty of Arts be hereafter called the Faculty of Arts and Science. At the same meeting of the Senate the committee was re-appointed, with one addition, 'to draft the necessary regulations on receipt of the syllabuses from the Boards of studies and report to a future meeting of the Senate.'

On the recommendation of this committee the Senate, at its meeting held on 19th October 1917 adopted the enclosed new body of regulations providing for courses of study and examinations in Science as well as the enclosed alterations in the existing regulations most of which are consequential; and I am directed by the syndicate to submit them for the sanction of Government under section 25 (1) of the Indian Universities Act, 1904.

2. Against the resolution of the Senate providing for the deletion of Physical Science and Natural Science from the list, in regulation 198 II, of branches of knowledge to be taken by B.A. (Honours) candidates [vide item 6 (a) in the alterations in the existing regulations enclosed], Mr. P. V. Seshu Ayyar has lodged a protest under Regulation 64. The procedure laid down in the regulation is being followed; and in due course the protest and the memorandum in support of the Senate's resolution prepared by the three members of that body duly elected for the purpose will be submitted for the consideration and orders of the Governor in Council.

ENCLOSURES

(i)

UNIVERSITY OF MADRAS.

Regulations for the Bachelor of Science, the Bachelor of Science (Honours) and the Master of Science Degrees.

COURSES OF STUDY AND EXAMINATIONS FOR THE DEGREES IN SCIENCE.

Undergraduates who have passed the Intermediate Examination in Arts and Science and desire to proceed to a degree in Science shall undergo a further course of study varying in length according as they intend to proceed to the Bachelor of Science Degree Examination or to the Bachelor of Science (Honours) Degree Examination.

BACHELOR OF SCIENCE DEGREE.

A. Courses of Study.

2. For the Bachelor of Science Degree the course shall extend over a period of two years and shall comprise instruction in—

Part I. English.

Part II. Any three of the following branches of knowledge:—

- | | |
|------------------|---------------|
| (i) Mathematics. | (iv) Botany. |
| (ii) Physics. | (v) Zoology. |
| (iii) Chemistry. | (vi) Geology. |

3. The courses of study shall be as defined in the syllabuses detailed below:—

Part I. English.

(1) Composition. (2) Nineteenth Century Prose as prescribed for candidates for the B.A. Degree.

Part II.

I. Mathematics.

In addition to the subjects prescribed under (a) Mathematics in Group (i) of the Intermediate Examination, the course will comprise Algebra, Plane Trigonometry, Analytical Geometry, Elements of the Calculus, Dynamics and Astronomy.

Pure Mathematics.

Algebra.

Inequalities. Limits. Elementary theorems in convergence and divergence of series. The Binomial Theorem for any rational index. Exponential and Logarithmic series. Partial fractions. Elementary methods for the summation of series. Elementary properties of simple continued fractions. Intermediate equations of the first degree. Elementary properties of Determinants.

Typical graphs; $y = ax^n$, $y = \frac{a}{x^n}$, $y = ax + b + \frac{c}{x}$, $y = ax + b + \frac{c}{x^2}$.

Graphical solution of cubic and biquadratic equations.

General properties of the equation of the n th degree and its roots and co-efficients. Simple transformations of equations. Reciprocal equations. Approximate solution of numerical equations.

Trigonometry

Fuller treatment of the Intermediate course. Quadrilaterals inscribed in and circumscribed about circles. Regular polygons. Limits of $\sin x/x$ and $\tan x/x$ as x tends to zero, De Moivre's theorem and its immediate applications. Summation of elementary trigonometrical series.

Analytical Geometry

The Cartesian equations of the straight line and the circle referred to rectangular axes; the parabola, ellipse and hyperbola referred to their principal axes; and the rectangular hyperbola referred to its asymptotes. The general equation of the second degree. The polar equations of the straight line, circle and the conic. Simple problems on the above.

Dynamics.

Astronomy.

The Calendar. The use of the Nautical Almanac.

Dynamics	as in the B.A. (ii-A) Course
Properties of Matter	Do. do.
Hydrostatics	Do. do.
Heat	Do. do.
Light	Do. do.

Magnetism	...	...	...	...	as in the B.A. (ii-A) Course
Electricity	...	...	...	...	Do. do.
Sound	...	...	...	...	Do. do.
Practical Physics	...	...	...	...	Do. do.

At the practical examination the candidates' laboratory note books should be submitted.

Each note book must be countersigned by the professor or professors under whom the candidate has worked to certify it to be a bona fide record of work done by the candidate.

III. Chemistry

The course in Chemistry shall include—

1. General Inorganic and Organic Chemistry including chemical theory.
2. One of the following treated more fully at the option of the candidate :—
 - (a) Chemistry of the non-metals.
 - (b) Chemistry of the metals.
 - (c) Organic Chemistry.
3. Practical Chemistry.

The syllabuses for these courses are given below—

(i) Chemistry Inorganic including Chemical Theory.

Methods of determining equivalent, atomic and molecular weights; the atomic theory; valency; properties of gases; transition from gaseous to liquid state; vapour pressure and boiling point; osmotic pressure; theory of electrolytic dissociation; electrolysis; relation of chemical energy to electrical energy and to heat; law of mass action; catalysis; relation of physical properties to chemical constitution.

The descriptive portion will include the elements and their compounds studied from the stand' point of the periodic classification omitting the rare metals.

The following indicates the scope of the examination in Organic Chemistry :—

The elements of Organic Chemistry; the composition and relations of some of the typical carbon compounds; isomerism; polymerism; purification of organic substances; distillation; crystallization; criteria of purity; boiling point; melting point; methods of ultimate analysis of organic compounds; calculation of molecular weight from empirical formulae; constitutional formulae.

Methane; ethane; ethylene; acetylene; methyl chloride; methylene dichloride; chloro-ethyl alcohol form; bromoform; iodoform; carbon tetrachloride; methyl alcohol; ether; formaldehyde acetaldehyde; chloral; formic acid; acetic acid; butyric acid; stearic acid; esters; simple amines; oxalic acid; malonic acid; succinic acid; glycerol; the fat; lactic acid; tartaric acid; citric acid; the carbohydrates; starch; benzene; toluene; chlorobenzene; nitrobenzene; aniline; benzene sulphonic acid; diazobenzene; benzaldehyde; benzoic acid; benzyl alcohol.

(ii) (a) Chemistry of the Non-metals considered in detail.

(b) Chemistry of the metals (omitting the rare metals) considered in detail.

(c) Organic Chemistry (present syllabus).

(iii) Practical Chemistry (present II-B syllabus) with potassium in (2) deleted.

IV. Botany

1. The main points of structure, development, life history and the taxonomic relation of the following groups in general and the genera in particular :—

Bacteria, *Cyanophyceae* (*Oscillaria*, *Nostoc* and *Rivularia*), *Conjugatae* (*Spirogyra* Deysmids), *Diatomaceae*, *Chlorophyceae* (*Chlamydomonas*, *Eudorina*, *Pandorina*, *Volvox*, *Enteromorpha* or *Ulva*, *Colochoete*, *Ulothrix*, *Oedogonium*, *Cladophora*, *Hydrodictyon*, *Caulerpa* and *Protosiphon*), *Phaeophyceae* (*Ectocarpus*, *Laminaria*, *Fucus* and *Sargassum*), *Rhodophyceae* (*Lemanea*, *Dudresnaya*, *Polyides*) *Characeae* (*Nitella* or *Chara*), *Phycomyces* (*Pythium*, *Mucor*), *Ascomycetes* (*Sphaerotheca* or *Erysiphe*, *Penicillium*, *Claviceps*, *Peziza*), *Basidiomycetes* (*Agaricus*, *Lycoperdon*, *Ustilago*, *Puccinia*) *Muscincae* (*Polytrichum*, *Funaria*, *Marchantia* *Riccia*), *Eusporangiateae* (*Ophioglossum*), *Leptosporangiateae* *Filices* and *Hydropterideae*, *Lycopodium*, *Selaginella*, *Gymnosperms* (*Pinus*, *Cupressus* and *cycas*).

2. The external morphology of flowering plants.

2. The general principles of classification and the distinguishing characteristics of the following Natural orders as used in the Flora of British India:—

Ranunculaceae.	Oleaceae.	Anacardiaceae.	Euphorbiaceae.
Anonaceae.	Apocynaceae.	Fabaceae.	Urticaceae.
Menispermaceae.	Asclepiadaceae.	Caesalpiniaceae.	Piperaceae.
Nymphaeaceae.	Boraginaceae.	Mimosaceae.	Lauraceae.
Cruciferae.	Convolvulaceae.	Rosaceae.	Orchidaceae.
Capparidaceae.	Solanaceae.	Combretaceae.	Scitamineae.
Caryophyllaceae.	Scrophulariaceae.	Myrtaceae.	Amaryllidaceae.
Guttiferae.	Acanthaceae.	Lythraceae.	Liliaceae.
Malvaceae.	Labiatae.	Cucurbitaceae.	Commelinaceae.
Sterculiaceae.	Verbenaceae.	Umbelliferae.	Palmeae.
Tiliaceae.	Rutaceae.	Rubiaceae.	Aroideae.
Geraniaceae.	Meliaceae.	Amarantaceae.	Cyperaceae.
Compositae.	Rhamnaceae.	Loranthaceae.	Gramineae.
Sapotaceae.	Sapindaceae.		

4. Physiology

The chemical composition of the plant. Materials of plant food and their sources. The nature of soil and importance of its constituents and micro-organisms. Movement of water and gases. Assimilation of carbon and nitrogen. Transpiration and translocation of the assimilated products. Metabolism. Parasitism and other special modes of nutrition. Respiration. The influence of light, heat and gravity. Growth, movements and irritability in plants. Sexual reproduction and its significance. Vegetative reproduction. The phenomena of cross-fertilization. Variation, Heredity, and Mendelism. Theories of Evolution and origin of Species.

5. Histology

The structure and modes of the division of the cell, and the nature of its contents. The nature and mode of origin of plastids, cell sap and other cell contents. The physical and chemical properties of protoplasm and cell-wall. The origin, nature and development of plant tissues. Primary and secondary tissues, and their distribution in the plant body.

Practical Work

Candidates are expected to be able to make preparations illustrating the form and structure of any plant of the groups or orders mentioned in the syllabus and to describe them with sketches sufficient for their identification; to make dissections with the simple microscope of the floral parts of phanerogams, and to make drawings, construct floral diagrams and refer them to their natural orders; to describe in technical language plants belonging to any of the orders or groups specified in the syllabus.

At the practical examination each candidate must submit his laboratory note books and a collection of named plants collected and preserved by himself.

V. Zoology

The Scope of zoology.—The leading features in the structure, the most important points concerning the development, the affinities, and the general classification of the forms included in the following groups (except in rare cases, no knowledge of extinct forms will be required).—Protozoa. Porifera. Coelenterata. Platyhelminia. Nemertini. Nematoda. Acanthocephala. Chetognatha. Rotifera. Brachiopoda. Annelida, Phoronidea Polyzoa. Arthropoda. Mollusca. Echinodermata Chordata.

A general acquaintance with the vertebrate fauna of South India.

The geographical distribution of the more interesting groups of the Chordata. Outlines of the theory of organic evolution. Evidence on which the theory is based.

Candidates will be required to examine describe, identify, or otherwise deal with specimens and preparations illustrating points of zoological interest in connexion with any of the preceding groups. They will in addition, be expected to have a full practical knowledge of the structure, and will be required to make dissections and simple microscopical preparations, of any of the following types:—

Amoeba. Vorticella. Hydra. Earthworm. Leech. Prawn and Crab (external characters). Centipede (external characters). Cockroach. Freshwater Mussel. Amphioxus (preparations and sections). Dogfish (skeleton). Frog. Pigeon. Hare or Rabbit.

Candidates may also be examined by *ex vivo* questions.

VI. Geology

- I. Physiography.
- II. Mineralogy and Crystallography.
- III. Petrology.
- IV. Structural and field Geology.
- V. Stratigraphy and Palaeontology.

P.P. 2000

The general principles of classification and the following list of subjects are to be taken into consideration in the examination.

1. Geology	2. Botany	3. Zoology	4. Chemistry
5. Physics	6. Mathematics	7. English	8. History
9. Geography	10. Music	11. Art	12. Physical Education
13. Agriculture	14. Forestry	15. Fisheries	16. Mining
17. Metallurgy	18. Textiles	19. Leather	20. Paper
21. Glass	22. Pottery	23. Jewellery	24. Soap
25. Perfumery	26. Cosmetics	27. Dyeing	28. Printing
29. Bookbinding	30. Stationery	31. Typewriting	32. shorthand
33. Bookkeeping	34. Law	35. Medicine	36. Pharmacy
37. Veterinary	38. Dentistry	39. Nursing	40. Midwifery
41. Public Health	42. Sanitation	43. Hygiene	44. Dietetics
45. Food and Nutrition	46. Child Health	47. Mental Health	48. Social Hygiene
49. Public Administration	50. Local Government	51. Municipalities	52. Urban Planning
53. Rural Planning	54. Housing	55. Transport	56. Communication
57. Commerce	58. Industry	59. Agriculture	60. Fisheries
61. Forestry	62. Mining	63. Metallurgy	64. Textiles
65. Leather	66. Paper	67. Glass	68. Pottery
69. Jewellery	70. Soap	71. Perfumery	72. Cosmetics
73. Dyeing	74. Printing	75. Bookbinding	76. Stationery
77. Typewriting	78. shorthand	79. Bookkeeping	80. Law
81. Medicine	82. Pharmacy	83. Veterinary	84. Dentistry
85. Nursing	86. Midwifery	87. Public Health	88. Sanitation
89. Hygiene	90. Dietetics	91. Child Health	92. Mental Health
93. Social Hygiene	94. Public Administration	95. Local Government	96. Municipalities
97. Urban Planning	98. Rural Planning	99. Housing	100. Transport
101. Communication	102. Commerce	103. Industry	104. Agriculture
105. Fisheries	106. Forestry	107. Mining	108. Metallurgy
109. Textiles	110. Leather	111. Paper	112. Glass
113. Pottery	114. Jewellery	115. Soap	116. Perfumery
117. Cosmetics	118. Dyeing	119. Printing	120. Bookbinding
121. Stationery	122. Typewriting	123. shorthand	124. Bookkeeping
125. Law	126. Medicine	127. Pharmacy	128. Veterinary
129. Dentistry	130. Nursing	131. Midwifery	132. Public Health
133. Sanitation	134. Hygiene	135. Dietetics	136. Child Health
137. Mental Health	138. Social Hygiene	139. Public Administration	140. Local Government
141. Municipalities	142. Urban Planning	143. Rural Planning	144. Housing
145. Transport	146. Communication	147. Commerce	148. Industry
149. Agriculture	150. Fisheries	151. Forestry	152. Mining
153. Metallurgy	154. Textiles	155. Leather	156. Paper
157. Glass	158. Pottery	159. Jewellery	160. Soap
161. Perfumery	162. Cosmetics	163. Dyeing	164. Printing
165. Bookbinding	166. Stationery	167. Typewriting	168. shorthand
169. Bookkeeping	170. Law	171. Medicine	172. Pharmacy
173. Veterinary	174. Dentistry	175. Nursing	176. Midwifery
177. Public Health	178. Sanitation	179. Hygiene	180. Dietetics
181. Child Health	182. Mental Health	183. Social Hygiene	184. Public Administration
185. Local Government	186. Municipalities	187. Urban Planning	188. Rural Planning
189. Housing	190. Transport	191. Communication	192. Commerce
193. Industry	194. Agriculture	195. Fisheries	196. Forestry
197. Mining	198. Metallurgy	199. Textiles	200. Leather
201. Paper	202. Glass	203. Pottery	204. Jewellery
205. Soap	206. Perfumery	207. Cosmetics	208. Dyeing
209. Printing	210. Bookbinding	211. Stationery	212. Typewriting
213. shorthand	214. Bookkeeping	215. Law	216. Medicine
217. Pharmacy	218. Veterinary	219. Dentistry	220. Nursing
221. Midwifery	222. Public Health	223. Sanitation	224. Hygiene
225. Dietetics	226. Child Health	227. Mental Health	228. Social Hygiene
229. Public Administration	230. Local Government	231. Municipalities	232. Urban Planning
233. Rural Planning	234. Housing	235. Transport	236. Communication
237. Commerce	238. Industry	239. Agriculture	240. Fisheries
241. Forestry	242. Mining	243. Metallurgy	244. Textiles
245. Leather	246. Paper	247. Glass	248. Pottery
249. Jewellery	250. Soap	251. Perfumery	252. Cosmetics
253. Dyeing	254. Printing	255. Bookbinding	256. Stationery
257. Typewriting	258. shorthand	259. Bookkeeping	260. Law
261. Medicine	262. Pharmacy	263. Veterinary	264. Dentistry
265. Nursing	266. Midwifery	267. Public Health	268. Sanitation
269. Hygiene	270. Dietetics	271. Child Health	272. Mental Health
273. Social Hygiene	274. Public Administration	275. Local Government	276. Municipalities
277. Urban Planning	278. Rural Planning	279. Housing	280. Transport
281. Communication	282. Commerce	283. Industry	284. Agriculture
285. Fisheries	286. Forestry	287. Mining	288. Metallurgy
289. Textiles	290. Leather	291. Paper	292. Glass
293. Pottery	294. Jewellery	295. Soap	296. Perfumery
297. Cosmetics	298. Dyeing	299. Printing	300. Bookbinding
301. Stationery	302. Typewriting	303. shorthand	304. Bookkeeping
305. Law	306. Medicine	307. Pharmacy	308. Veterinary
309. Dentistry	310. Nursing	311. Midwifery	312. Public Health
313. Sanitation	314. Hygiene	315. Dietetics	316. Child Health
317. Mental Health	318. Social Hygiene	319. Public Administration	320. Local Government
321. Municipalities	322. Urban Planning	323. Rural Planning	324. Housing
325. Transport	326. Communication	327. Commerce	328. Industry
329. Agriculture	330. Fisheries	331. Forestry	332. Mining
333. Metallurgy	334. Textiles	335. Leather	336. Paper
337. Glass	338. Pottery	339. Jewellery	340. Soap
341. Perfumery	342. Cosmetics	343. Dyeing	344. Printing
345. Bookbinding	346. Stationery	347. Typewriting	348. shorthand
349. Bookkeeping	350. Law	351. Medicine	352. Pharmacy
353. Veterinary	354. Dentistry	355. Nursing	356. Midwifery
357. Public Health	358. Sanitation	359. Hygiene	360. Dietetics
361. Child Health	362. Mental Health	363. Social Hygiene	364. Public Administration
365. Local Government	366. Municipalities	367. Urban Planning	368. Rural Planning
369. Housing	370. Transport	371. Communication	372. Commerce
373. Industry	374. Agriculture	375. Fisheries	376. Forestry
377. Mining	378. Metallurgy	379. Textiles	380. Leather
381. Paper	382. Glass	383. Pottery	384. Jewellery
385. Soap	386. Perfumery	387. Cosmetics	388. Dyeing
389. Printing	390. Bookbinding	391. Stationery	392. Typewriting
393. shorthand	394. Bookkeeping	395. Law	396. Medicine
397. Pharmacy	398. Veterinary	399. Dentistry	400. Nursing
401. Midwifery	402. Public Health	403. Sanitation	404. Hygiene
405. Dietetics	406. Child Health	407. Mental Health	408. Social Hygiene
409. Public Administration	410. Local Government	411. Municipalities	412. Urban Planning
413. Rural Planning	414. Housing	415. Transport	416. Communication
417. Commerce	418. Industry	419. Agriculture	420. Fisheries
421. Forestry	422. Mining	423. Metallurgy	424. Textiles
425. Leather	426. Paper	427. Glass	428. Pottery
429. Jewellery	430. Soap	431. Perfumery	432. Cosmetics
433. Dyeing	434. Printing	435. Bookbinding	436. Stationery
437. Typewriting	438. shorthand	439. Bookkeeping	440. Law
441. Medicine	442. Pharmacy	443. Veterinary	444. Dentistry
445. Nursing	446. Midwifery	447. Public Health	448. Sanitation
449. Hygiene	450. Dietetics	451. Child Health	452. Mental Health
453. Social Hygiene	454. Public Administration	455. Local Government	456. Municipalities
457. Urban Planning	458. Rural Planning	459. Housing	460. Transport
461. Communication	462. Commerce	463. Industry	464. Agriculture
465. Fisheries	466. Forestry	467. Mining	468. Metallurgy
469. Textiles	470. Leather	471. Paper	472. Glass
473. Pottery	474. Jewellery	475. Soap	476. Perfumery
477. Cosmetics	478. Dyeing	479. Printing	480. Bookbinding
481. Stationery	482. Typewriting	483. shorthand	484. Bookkeeping
485. Law	486. Medicine	487. Pharmacy	488. Veterinary
489. Dentistry	490. Nursing	491. Midwifery	492. Public Health
493. Sanitation	494. Hygiene	495. Dietetics	496. Child Health
497. Mental Health	498. Social Hygiene	499. Public Administration	500. Local Government
501. Municipalities	502. Urban Planning	503. Rural Planning	504. Housing
505. Transport	506. Communication	507. Commerce	508. Industry
509. Agriculture	510. Fisheries	511. Forestry	512. Mining
513. Metallurgy	514. Textiles	515. Leather	516. Paper
517. Glass	518. Pottery	519. Jewellery	520. Soap
521. Perfumery	522. Cosmetics	523. Dyeing	524. Printing
525. Bookbinding	526. Stationery	527. Typewriting	528. shorthand
529. Bookkeeping	530. Law	531. Medicine	532. Pharmacy
533. Veterinary	534. Dentistry	535. Nursing	536. Midwifery
537. Public Health	538. Sanitation	539. Hygiene	540. Dietetics
541. Child Health	542. Mental Health	543. Social Hygiene	544. Public Administration
545. Local Government	546. Municipalities	547. Urban Planning	548. Rural Planning
549. Housing	550. Transport	551. Communication	552. Commerce
553. Industry	554. Agriculture	555. Fisheries	556. Forestry
557. Mining	558. Metallurgy	559. Textiles	560. Leather
561. Paper	562. Glass	563. Pottery	564. Jewellery
565. Soap	566. Perfumery	567. Cosmetics	568. Dyeing
569. Printing	570. Bookbinding	571. Stationery	572. Typewriting
573. shorthand	574. Bookkeeping	575. Law	576. Medicine
577. Pharmacy	578. Veterinary	579. Dentistry	580. Nursing
581. Midwifery	582. Public Health	583. Sanitation	584. Hygiene
585. Dietetics	586. Child Health	587. Mental Health	588. Social Hygiene
589. Public Administration	590. Local Government	591. Municipalities	592. Urban Planning
593. Rural Planning	594. Housing	595. Transport	596. Communication
597. Commerce	598. Industry	599. Agriculture	600. Fisheries
601. Forestry	602. Mining	603. Metallurgy	604. Textiles
605. Leather	606. Paper	607. Glass	608. Pottery
609. Jewellery	610. Soap	611. Perfumery	612. Cosmetics
613. Dyeing	614. Printing	615. Bookbinding	616. Stationery
617. Typewriting	618. shorthand	619. Bookkeeping	620. Law
621. Medicine	622. Pharmacy	623. Veterinary	624. Dentistry
625. Nursing	626. Midwifery	627. Public Health	628. Sanitation
629. Hygiene	630. Dietetics	631. Child Health	632. Mental Health
633. Social Hygiene	634. Public Administration	635. Local Government	636. Municipalities
637. Urban Planning	638. Rural Planning	639. Housing	640. Transport
641. Communication	642. Commerce	643. Industry	644. Agriculture
645. Fisheries	646. Forestry	647. Mining	648. Metallurgy
649. Textiles	650. Leather	651. Paper	652. Glass
653. Pottery	654. Jewellery	655. Soap	656. Perfumery
657. Cosmetics	658. Dyeing	659. Printing	660. Bookbinding
661. Stationery	662. Typewriting	663. shorthand	664. Bookkeeping
665. Law	666. Medicine	667. Pharmacy	668. Veterinary
669. Dentistry	670. Nursing	671. Midwifery	672. Public Health
673. Sanitation	674. Hygiene	675. Dietetics	676. Child Health
677. Mental Health	678. Social Hygiene	679. Public Administration	680. Local Government
681. Municipalities	682. Urban Planning	683. Rural Planning	684. Housing
685. Transport	686. Communication	687. Commerce	688. Industry
689. Agriculture	690. Fisheries	691. Forestry	692. Mining
693. Metallurgy	694. Textiles	695. Leather	696. Paper
697. Glass	698. Pottery	699. Jewellery	700. Soap
701. Perfumery	702. Cosmetics	703. Dyeing	704. Printing
705. Bookbinding	706. Stationery	707. Typewriting	708. shorthand
709. Bookkeeping	710. Law	711. Medicine	712. Pharmacy
713. Veterinary	714. Dentistry	715. Nursing	716. Midwifery
717. Public Health	718. Sanitation	719. Hygiene	720. Dietetics
721. Child Health	722. Mental Health	723. Social Hygiene	724. Public Administration
725. Local Government	726. Municipalities	727. Urban Planning	728. Rural Planning
729. Housing	730. Transport	731. Communication	732. Commerce
733. Industry	734. Agriculture	735. Fisheries	736. Forestry
737. Mining	738. Metallurgy	739. Textiles	740. Leather
741. Paper	742. Glass	743. Pottery	744. Jewellery
745. Soap	746. Perfumery	747. Cosmetics	748. Dyeing
749. Printing	750. Bookbinding	751. Stationery	752. Typewriting
753. shorthand	754. Bookkeeping	755. Law	756. Medicine
757. Pharmacy	758. Veterinary	759. Dentistry	760. Nursing
761. Midwifery	762. Public Health	763. Sanitation	764. Hygiene
765. Dietetics	766. Child Health	767. Mental Health	768. Social Hygiene
769. Public Administration	770. Local Government	771. Municipalities	772. Urban Planning
773. Rural Planning	774. Housing	775. Transport	776. Communication
777. Commerce	778. Industry	779. Agriculture	780. Fisheries
781. Forestry	782. Mining	783. Metallurgy	784. Textiles
785. Leather	786. Paper	787. Glass	788. Pottery
789. Jewellery	790. Soap	791. Perfumery	792. Cosmetics
793. Dyeing	794. Printing	795. Bookbinding	796. Stationery
797. Typewriting	798. shorthand	799. Bookkeeping	800. Law
801. Medicine	802. Pharmacy	803. Veterinary	804. Dentistry
805. Nursing	806. Midwifery	807. Public Health	808. Sanitation
809. Hygiene	810. Dietetics	811. Child Health	812. Mental Health
813. Social Hygiene	814. Public Administration	815. Local Government	816. Municipalities
817. Urban Planning	818. Rural Planning	819. Housing	820. Transport
821. Communication	822. Commerce	823. Industry	824. Agriculture
825. Fisheries	826. Forestry	827. Mining	828. Metallurgy
829. Textiles	830. Leather	831. Paper	832. Glass
833. Pottery	834. Jewellery	835. Soap	836. Perfumery
837. Cosmetics	838. Dyeing	839. Printing	840. Bookbinding
841. Stationery	842. Typewriting	843. shorthand	844. Bookkeeping
845. Law	846. Medicine	847. Pharmacy	848. Veterinary
849. Dentistry	850. Nursing	851. Midwifery	852. Public Health
853. Sanitation	854. Hygiene	855. Dietetics	856. Child Health
857. Mental Health	858. Social Hygiene	859. Public Administration	860. Local Government
861. Municipalities	862. Urban Planning	863. Rural Planning	864. Housing
865. Transport	866. Communication	867. Commerce	868. Industry
869. Agriculture	870. Fisheries	871. Forestry	872. Mining
873. Metallurgy	874. Textiles	875. Leather	876. Paper
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881. Perfumery	882. Cosmetics	883. Dyeing	884. Printing
885. Bookbinding	886. Stationery	887. Typewriting	888. shorthand
889. Bookkeeping	890. Law	891. Medicine	892. Pharmacy
893. Veterinary	894. Dentistry	895. Nursing	896. Midwifery
897. Public Health	898. Sanitation	899. Hygiene	900. Dietetics
901. Child Health	902. Mental Health	903. Social Hygiene	904. Public Administration
905. Local Government	906. Municipalities	907. Urban Planning	908. Rural Planning
909. Housing	910. Transport	911. Communication	912. Commerce
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917. Mining	918. Metallurgy	919. Textiles	920. Leather
921. Paper	922. Glass	923. Pottery	924. Jewellery
925. Soap	926. Perfumery	927. Cosmetics	928. Dyeing
929. Printing	930. Bookbinding	931. Stationery	932. Typewriting
933. shorthand	934. Bookkeeping	935. Law	936. Medicine
937. Pharmacy	938. Veterinary	939. Dentistry	940. Nursing
941. Midwifery	942. Public Health	943. Sanitation	944. Hygiene
945. Dietetics	946. Child Health	947. Mental Health	948. Social Hygiene
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953. Rural Planning	954. Housing	955. Transport	956. Communication
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969. Jewellery	970. Soap	971. Perfumery	972. Cosmetics
973. Dyeing	974. Printing	975. Bookbinding	976. Stationery
977. Typewriting	978. shorthand	979. Bookkeeping	980. Law
981. Medicine	982. Pharmacy	983. Veterinary	984. Dentistry
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989. Hygiene	990. Dietetics	991. Child Health	992. Mental Health
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The general principles of classification and the following list of subjects are to be taken into consideration in the examination.

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1. PHYSIOGRAPHY.

An elementary course of lectures on the following:—

The earth as a planet, its general relations to the other members of the solar system, hypotheses as to the origin of the earth; form, size and density of the earth; its movements and their effects.

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5. (a) No candidate shall be eligible for the Degree of Bachelor of Science until he has passed the examination in Part I—English and in Part II, viz., three of the optional branches of knowledge contained in the courses of study.

(b) No candidate shall be admitted to the examination unless he has passed the Intermediate Examination in Arts and Science in this University or an examination accepted by the Syndicate as equivalent thereto. Each candidate for examination in either part must forward with his application his intermediate or other accepted certificate and he must also forward, so as to reach the Registrar before the 20th March preceding the examination, certificates, in the forms hereinafter prescribed, from the head of an affiliated college, to the effect that he attended an affiliated college for a period of at least one year in the case of Part I, or of at least two years in the case of Part II, after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed the course of instruction prescribed for the part or parts in which he proposes to appear, and that his progress and conduct have been satisfactory.

6. A candidate for the B.Sc. Degree Examination may present himself for Part I at the end of the first year of the course and thereafter may at his option present himself for the whole or for either part at any one time.

7. A candidate who fails to pass the examination in Part II on the first occasion on which he presents himself for examination shall produce on the next occasion on which he presents himself for the examination a certificate of having attended in an affiliated college an additional year of instruction in each of the three selected optional branches of knowledge.

8. Applications for admission to either part of the examination in the form prescribed must reach the Registrar not later than the 20th January preceding the examination.

9. No candidate shall be admitted to the examination until he has been registered. No candidate shall be registered for Part I of the examination till he has paid a fee of ten rupees, or for Part II of the examination until he has paid a fee of thirty-six rupees. A candidate shall be registered afresh on each occasion on which he presents himself for examination.

10. The examination for the B.Sc. Degree shall be conducted in the order of time and subjects set forth in the following tables, and the number of marks assigned to each subject shall be as therein specified. In the case of Part II of the examination the date of the first day of the examination in each of the optional branches of knowledge shall be determined annually by the Syndicate and shall be notified in the *Gazette* in the month of February.

PART I.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Composition ...	90
	2—4-30	Nineteenth Century Prose ...	60
Total ...			150

PART II.
Mathematics.

First day ...	10—1	Algebra and Trigonometry ...	90
	2—4	Astronomy ...	60
Second day ...	10—1	Calculus and Analytical Geometry ...	90
	2—4	Dynamics ...	60
Total ...			300

Physics.

First day ...	10—1	Properties of matter and Heat ...	100
	2—5	Light, Electricity and Sound ...	100
Second day ...	10—1	Practical Physics ...	100
Total ...			300

Chemistry.

First day ...	10—1	General Chemistry ...	100
	2—5	Optional Chemistry ...	100
Second day ...	10—4	Practical Chemistry ...	100
Total ...			300

11. No candidate shall be declared to have passed Part I of the examination unless he obtains not less than 40 per cent of the total number of marks. No candidate shall be declared to have passed Part II of the examination unless he obtains not less than 40 per cent of the total marks, and not less than 30 per cent in each of the three selected optional branches of knowledge.

Successful candidates in Part II shall be arranged in three classes :—The *first*, consisting of those who obtain not less than 60 per cent: the *second* of those who obtain not less than 50 per cent: and the *third*, of the remainder.

A. Courses of study

Part I English

Part II *Either*

- one of the following as main subject and any other two of those prescribed for the B.Sc., Pass Degree as subsidiary subjects :—

- iv. Botany.
- v. Zoology.
- vi. Geology.

2. The course of study in English and in the subsidiary subjects in the case of students taking iv, v, or vi as the main subject shall be the same as for the B.Sc. Pass Degree. The courses of study in the main subject are as detailed below :—

I. MATHEMATICS.

A candidate shall be required to have a sound knowledge of—

1. Pure Mathematics including Projective Geometry.
2. Algebra and theory of Equations.
3. Trigonometry, plane and spherical.

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Subject	First day	Second day	Total
Polish I	10-1	...	100
Polish II	8-9	...	100
Practical Polish I	10-1	...	50
Practical Polish II	8-9	...	50
Total	...	...	300
Polish I	10-1	...	100
Polish II	8-9	...	100
Practical Polish I	10-1	...	50
Practical Polish II	8-9	...	50
Total	...	...	300
Polish I	10-1	...	100
Polish II	8-9	...	100
Practical Polish I	10-1	...	50
Practical Polish II	8-9	...	50
Total	...	...	300

of the candidates who have been selected for the examination in the subject of Polish. The candidates who have been selected for the examination in the subject of Polish are as follows: ...

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4. Differential and Integral Calculus, including Fourier's series.
5. Elementary Differential Equations.
6. Co-ordinate Geometry of two dimensions.
7. Solid Geometry—the line, plane, sphere and surfaces of the second degree.
- (b) Applied Mathematics:
 1. Statics, excluding the theory of potentials.
 2. Dynamics of a Particle.
 3. Dynamics of a Rigid Body—motion in two dimensions.
 4. Hydrostatics.
 5. Astronomy.
- (c) Any two of the following subjects at the option of the student:—
 1. Hydrodynamics—irrotational motion and liquid wave motion in two dimensions.
 2. Thermodynamics.
 3. Theory of Light.
 4. Advanced Dynamics.
 5. Attraction and the Theory of Potentials.
 6. Theory of Heat Conduction.

A candidate shall give notice, through his college a year before the date of the examination, of the particular subjects he proposes to take.
Three papers shall be set in Pure Mathematics, three in Applied, and one in each of the optional subjects selected. Each paper shall be of three hours' duration and shall contain questions on the Principles developed in the ordinary treatment of the subject as well as exercises of moderate difficulty arising therefrom.

II. PHYSICS.

A candidate shall be required to have a sound knowledge of the experimental side of the following subjects, and also such knowledge of the theoretical side of each as may be obtained by the applications of the calculus, and simple differential equations:—
Properties of matter.
Heat.
Geometrical and Physical Optics.
Sound.
Magnetism and Electricity.

A candidate shall also be required to have a special knowledge, experimental and theoretical, of one of the following subjects, the choice of the subject being left to the option of the candidate:—

- Thermodynamics.
- Theory of Heat Conduction.
- Kinetics Theory of Gases and its applications.
- Theory of Electricity and Magnetism.
- Radio activity.
- Theory of Sound.
- Wave Theory of Light.
- Radiation: Electromagnetic and other theories.

A candidate shall give notice, through his college, a year before the date of the examination, of the particular subject he proposes to take.

The knowledge of the candidate shall be tested by a practical examination, in which he will be expected to make physical measurements and observations of the more advanced kind.

Each candidate shall submit his laboratory note-books containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the professor or professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the examiners engaged in conducting the examination.

Chemistry.—The course shall be the same as that prescribed for students taking the course in ii-A for the B.A. Degree.

III. CHEMISTRY.

Chemistry.—A candidate shall be required to show that he has made a more comprehensive study than for the B.A. Degree, of the four main divisions of the subject:—

1. General theoretical Chemistry, including its historical development.
2. Chemistry of the non-metals and metals.
3. Chemistry of the carbon compounds.
4. Physical Chemistry.

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A candidate shall also be required to have a special knowledge, experimental and theoretical, of one of the following subjects, the choice of subject being left to the option of the candidate :-

- (a) Electro-Chemistry.
- (b) Mineralogy and Elementary Crystallography.
- (c) Elementary Crystallography and Stereochemistry.
- (d) Metallurgical Chemistry.
- (e) Tinctorial Chemistry.
- (f) Bio-Chemistry.
- (g) Chemistry of the rare earths and radio-elements.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subject he proposes to take.

The candidate shall be required to be practically familiar with the ordinary methods of experiment, and of the methods of analysis in common use, including the manipulation of gases. The examination shall also include the estimation of carbon, hydrogen, nitrogen, sulphur and the halogens in organic compounds; and the determination of molecular weights by the freezing and boiling point methods, and by vapour density.

The candidate shall submit his laboratory note-books containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the professor or professors under whom the candidate has worked to certify it to be a bona fide record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the examiners engaged in conducting the examination.

Physics.—The course shall be the same as that prescribed for students taking the course in (ii-B) for the B.A. degree.

IV. BOTANY.

In addition to the course prescribed for the B.Sc. Degree the following :—
1. A fuller knowledge of the flowering plants of India and especially of South India, with regard not only to systematic relationships, but also to ecology, distribution and relationships with those of neighbouring areas.

2. A general knowledge of the principles of the systematic arrangement of flowering plants as exemplified in the *Genera Plantarum* and in *Die Natürlichen Pflanzenfamilien*.

3. The chief Botanical sources and commercial applications of the following economic products of India :—Cotton, jute and other fibres; vegetable oils: sugars: wood pulp: rubber: tannin: alkaloids.

4. A fuller knowledge of Fungi, especially with reference to their economic importance.

5. Methods of plant Histology and plant Physiology.

6. A general knowledge of Vascular Cryptogams and Gymnosperms and of Palaeobotany, especially with reference to the relationships of modern groups.

7. Some acquaintance with current Botanical literature and with the History of Botany.

Candidates will be required to present as a special subject one of the sections numbered 1, 3, 4, 5 and 6, and each candidate must give notice through his college, a year before the date of examination, of the particular subject he proposes to present.

The practical examination for the B.Sc. Honours Degree may include—
1. The identification of Indian plants with the help of a flora or any other books allowed by the examiners.

2. The preparation and correct interpretation of microscopic sections of plants.

3. The examination of a diseased or abnormal plant.

4. Practical Physiology and *viva voce* questions.

Every candidate will be required to submit a collection of named flowering plants, collected and preserved by himself. There may be also plants of one of the other main divisions of the vegetable kingdom.

V. ZOOLOGY.

The course shall be more complete than that for the B.A. Degree. The candidate will, in addition to the scheme already outlined, be expected to have a knowledge of minor groups like the Mesozoa, the more important groups of extinct animals, the early development of the chick and the outlines of vertebrate embryology and to go into the classification more fully. The practical work will not be confined to the types enumerated. The candidate may be required to dissect any of the more common types of animals included in the classes they study, to identify specimens with the aid of manuals, to report upon zoological collections, to make microscopical preparations, to cut sections with the microtome, and to show their practical acquaintance with the methods employed in studying the embryology of the chick. Candidates may also be examined by *viva voce* questions.

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- 1. Elementary Botany and Zoology, including the study of the life history of plants and animals.
- 2. Elementary Botany and Zoology, including the study of the life history of plants and animals.
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- 100. Elementary Botany and Zoology, including the study of the life history of plants and animals.

VI Geology

The syllabus of the B.Sc. Degree course treated more fully with the following additions:—
Mineralogy and Crystallography.—The thirty-two types of crystal symmetry, theories of crystal structure, systems of crystal notation, zonal characters, crystal projections and drawing; twin crystals, grouping and irregularities of crystals, parting planes, percussion figures, etched figures, etc. Use of the Reflecting Goniometer. General mathematical relations of crystals and measurement of crystal angles.

Description and determination of minerals by chemical and physical tests.

The chief ores and minerals of commercial value; their distribution, occurrence, with special reference to Indian examples, and their uses; nature and structure of chief types of ore deposits.

Petrology.—The principles underlying the genesis and classification of rocks. Mechanical separation of rock constituents; examination of sands; methods of the preparation of rock sections for the microscope. Optical properties of crystals. Practical determination of the optical characters of the chief rock-forming minerals with the petrological microscope, including the use of convergent light. Determination of the nature and history of rocks by means of the microscope.

Structural and Field Geology.—The relationships of structure to relief, drainage and economics. The composition and structure of rock masses as influencing scenery. Weathering and formation of soils. Each candidate is required to map and describe from his own personal observations the geology of an area selected by himself with the approval of the Professor.

Stratigraphy and palaeontology.—The geological formations with their lithology, sub-divisional fossils, correlation and economics. The physical geography and vulcanicity of the different periods. General distribution of existing faunas and floras and their relation to those of former geological periods; morphological characters of the more important types of fossils; drawing of fossils; Geology of India brought up to date.

The knowledge of the candidate will be tested also by practical examinations. *Viva voce* questions may be asked.

B.—Examinations.

3. The examination for the B.Sc. (Honours) Degree shall be held in Madras once a year commencing in the case of Part I on the first Monday in April, and in the case of Part II on the last Monday in March, but the Thursday, Friday and Saturday before Easter Day shall be *dies non*. Candidates may also be examined at other centres appointed by the Syndicate. A list of places at which the examination will be held shall be published annually in the preceding April.

No candidate shall be eligible for the B.Sc. (Honours) Degree until he has passed an examination in English and in one of the six branches of knowledge and prescribed combinations of subjects detailed in the courses of study.

4. The examination in Part I (English) shall be that for the B.A. and B.Sc. Degrees in (1) Nineteenth century prose, and (2) composition on additional set books. No candidate shall be declared to have passed unless he obtains 40 per cent of the total in those papers; candidates obtaining 60 per cent shall be declared to have passed with distinction.

(a) No candidate shall be admitted to the examination in Part I (English) unless he has passed the Intermediate Examination in Arts and Science in this University or an examination in some other University recognized by the Syndicate as equivalent thereto. Each candidate must forward with his application his Intermediate or other accepted certificate.

(b) A candidate applying for the examination in Part I (English) shall forward, so as to reach the Registrar before the 20th March preceding the examination, a certificate in the form hereinafter prescribed, from the head of an affiliated college to the effect that he has attended an affiliated college for a period of at least one year after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed a course of instruction in English, and that his progress and conduct have been satisfactory.

5. A candidate who is taking one of the three subjects, Botany, Zoology or Geology as his main subject, may appear for the examination in the subsidiary subjects at the end of the second year of the course. He shall not be admitted to the examination unless he has passed the Intermediate Examination in Arts and Science in this University, or an examination in some other University accepted by the Syndicate as equivalent thereto. He must forward with his application his Intermediate or other accepted certificate and he must also forward, so as to reach the Registrar before the 10th March preceding the examination, certificates in the forms hereinafter prescribed, from the head of an affiliated college to the effect that he attended an affiliated college for a period of at least two years after passing the Intermediate Examination in Arts and Science or other accepted examination, that he has completed the course of instruction prescribed for the subject or subjects in which he proposes to appear, and that his progress and conduct have been satisfactory.

6. The examinations in Botany, Zoology and Geology taken as subsidiary subject shall be the examinations in those subjects for the B.Sc. Degree. No candidate failing to pass the B.Sc. Degree Examination in the two subjects taken as subsidiary shall be admitted to the final examination in his main subject.

The final examination for the (Honours) Degree shall be conducted in the order of time and subjects set forth in the following tables, and the number of marks assigned to each subject shall be as there specified:—

Days.	Hours.	[Branch i.]		Marks.
		Subjects.		
First day	10-1	Pure Mathematics	...	150
	2-5	Applied Mathematics	...	150
Second day	10-1	Pure Mathematics	...	150
Third day	10-1	Applied Mathematics	...	150
Fourth day	10-1	Pure Mathematics	...	150
	2-5	Applied Mathematics	...	150
Fifth day	10-1	Optional Subject	...	200
Sixth day	10-1	Do.	...	200
Total				1,800

Branch ii.				
First day	10-1	Properties of Matter	...	120
	2-5	Heat and Sound	...	120
	10-1	Sound and Light	...	120
Second day	2-5	Magnetism and Electricity	...	120
	10-1	Optional Subject	...	120
Third day	2-5	Chemistry	...	100
Fourth day	10-4	Practical Examination in Chemistry	...	100
Fifth and sixth days.	10-4	{ Practical Examination in Physics Laboratory note-books in Physics	...	400 200
Total				1,400

Branch iii.				
First day	10-1	Chemistry	...	125
	2-5	Do.	...	125
	10-1	Do.	...	125
Second day	2-5	Do.	...	125
	10-1	Optional Subject	...	100
Third day	2-5	Physics	...	100
Fourth day	10-4	Practical Examination in Physics	...	100
Fifth, sixth and seventh days.	10-4	{ Do. in Chemistry Laboratory note-books in Chemistry	...	400 200
Total				1,400

Branches—iv Botany, v Zoology and vi Geology (as main subject).				
First day	10-1	Written Examination—I	...	150
	2-5	Do. II	...	150
	10-1	Do. III	...	150
Second day	2-5	Do. IV	...	150
	10-1	Practical Examination—I	...	100
	2-5	Do. II	...	100
	10-1	Do. III	...	100
Fourth day	2-5	Laboratory note-books	...	100
Fifth day	10-1	Special Subject in Botany	...	100
Total Botany				1,100
Total Zoology and Geology				1,000

The examination in the subsidiary subjects, in the case of candidates taking branches iv, v or vi, will be at the times prescribed for the B.Sc. Degree.

FORMS OF CERTIFICATE.

B.Sc. DEGREE EXAMINATION.

I certify that.....has attended the course of instruction in English at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory, and that he has completed the course of study prescribed for the B.Sc. Degree examination.

(Signature)

Principal.

* I certify that.....has attended the course of practical instruction in.....for the B.Sc. Degree Examination at the.....during the year.....

(Signature)

Professor or Lecturer.

I certify that.....has attended the course of practical instruction in.....for the B.Sc. Degree Examination at the.....during the year.....and that he has satisfactorily completed the course.

(Signature)

Professor or Lecturer.

I certify that.....has attended the course of practical instruction in.....for the B.Sc. Degree Examination at the.....during the year.....and that he has satisfactorily completed the course.

(Signature)

Professor or Lecturer.

B.Sc. (HONOURS) DEGREE EXAMINATION.

Preliminary (English Language).

I certify that.....has attended the course of instruction in English at the.....College during the year.....and that his progress and conduct have been satisfactory, and that he has completed the course of study prescribed for the Preliminary Examination in English for the B.Sc. (Honours) Degree.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory.

(Signature)

Principal.

I certify that.....has attended the course of instruction in.....at the.....College for three-fourths of the number of working days in the year.....and that his progress and conduct have been satisfactory, and that he has completed the course of study prescribed for the B.Sc. (Honours) Degree Examination.

(Signature)

Principal.

* I certify that.....has attended the course of practical instruction in.....for the B.Sc. (Honours) Degree Examination at the.....during the year.....

(Signature)

Professor or Lecturer.

* I certify that.....has attended the course of practical instruction in.....for the B.Sc. (Honours) Degree Examination at the.....during the year.....

(Signature)

Professor or Lecturer.

I certify that.....has attended the course of practical instruction in.....for the B.Sc. (Honours) Degree Examination at the.....during the year.....and that he has satisfactorily completed the course.

(Signature)

Professor or Lecturer.

* These will not be required in the case of Mathematics.

Regulation for the Degree of Master of Science.

A graduate Bachelor of Science of this University, or the holder of Science degree of another University accepted by the Syndicate as equivalent thereto, will be eligible for the degree of Master of Science on payment of a fee of one hundred rupees, provided he produces satisfactory evidence that he has worked for not less than one year, after passing the B.Sc. (Honours) or equivalent examination, under the direction of a Professor in an affiliated college or other person approved by the Syndicate, and has submitted a thesis of original work done, which is approved by each of three independent judges nominated by the Syndicate.

F. DEWSEBURY,
Registrar.

(ii)
UNIVERSITY OF MADRAS.

Resolution adopted by the Senate at its meeting held on October 19, 1917.

(1) That in Regulation 99 after the word 'Arts' the words 'and Science' be inserted, and that a similar insertion be made after the words 'Arts' in Regulations 71, 87, 106, 116, and 117.

(2) (a) That in Regulation 179, for the words 'the Intermediate Examination in Arts' the words 'the Intermediate Examination in Arts and Science' be substituted; and that a similar substitution be made throughout the Regulations wherever the words 'Intermediate Examination in Arts' appear.

(c) That in Regulation 180, after the words 'affiliated in Arts' the words 'or Science' be inserted.

(3) That in Regulations 218 and 222 after the words 'Bachelor of Arts' the words 'or Bachelor of Science' be inserted.

(4) That the new courses in Science come into operation from July, 1919.

(5) That, to allow of common papers being set for both the B.A. & B.Sc. Degree Examinations in as many subjects as possible, the following sentence be added to Regulation 196—

'In the case of Part II of the examination the date of the first day of the examination in each of the optional groups shall be determined annually by the Syndicate and shall be notified in the Gazette in the month of February.'

(6) (a) That in Regulation 195, under 'II. One of the following branches of knowledge'

ii. Physical Science—either ii-A or ii-B.

iii. Natural Science.

be deleted and that the remaining branches be renumbered.

(b) That in Regulation 201, in the last sentence, the words 'and if he appears for the examination . . . B.A. Degree Examination' be deleted.

(c) That in Regulation 207, the syllabuses under

ii-A. Physical Science.

ii-B. Physical Science.

iii. Natural Science.

be deleted and that the remaining subjects and syllabuses be renumbered.

(d) That in Regulation 208, the time-tables for Branch ii-A, Branch ii-B and Branch iii be deleted, and that the remaining Branches and time-tables be renumbered.

(e) That in Regulation 209, the divisions of examination under Branch ii and Branch iii be deleted and that the remaining branches and divisions be renumbered.

F. DEWSEBURY,
Registrar.

II

Memorandum No. 1372/B-1, Home (Education), dated 1st December 1917.

With reference to his letter No. 8018, dated the 3rd November 1917, the Registrar, University of Madras, is requested to state when a copy of the protest and of the reply memorandum thereto may be expected to be received at the Government Office.

(By order.)

C. RAMANUJA ACHARIYAR,
Registrar.

To the Registrar, University of Madras.

III

Letter—from the F. DEWSBURY, Esq., B.A., LL.B., Registrar, University of Madras.
To—the Secretary to Government, Home (Education) Department.
Dated—Senate House, the 11th December 1917.
No.—9089.

With reference to paragraph 2 of my letter No. 8018, dated the 3rd November last, I have the honour, by direction, to submit, for the consideration and orders of Government, the accompanying protest lodged by Mr. P. V. Seshu Ayyar under Regulation 64 against the Resolution of the Senate passed on 19th October 1917, providing for the deletion of Physical Science and Natural Science from the list, in Regulation 198-II, of branches of knowledge to be taken by B.A. (Honours) candidates, as well as the memorandum in support of the Senate's resolution prepared by Messrs. K. Littlehales, P. F. Fyson and J. L. Simonsen, the three members of that body duly elected for the purpose.

ENCLOSURES

UNIVERSITY OF MADRAS.

The following protest lodged by Mr. P. V. Seshu Ayyar, under Regulation 64, against the Resolution of the Senate passed at its meeting held on 19th October 1917, adopting alterations in the Regulations relating to the deletion of Physical Science and Natural Science from the list of branches of knowledge to be taken by candidates for the B.A. (Honours) Degree, is in accordance with the same Regulation, circulated to each member of the Senate who was present at the meeting, with a request that he will record a vote for three members of the Senate to form a Committee to prepare a memorandum in support of the Resolution. It is requested that the votes may be returned so as to be received by the Registrar not later than 12th November 1917.

(By order)

F. DEWSBURY, B.A., LL.B.,
Registrar.

SENATE HOUSE,
2nd November 1917.

TRIPPLICANE, MADRAS,
20th October 1917.

To

THE REGISTRAR,
University of Madras.

Sir,

With reference to the Resolutions (1) prescribing a time limit (viz., four years) within which one should appear for the B.Sc. (Honours) Degree Examination after passing the Intermediate Examination and (2) omitting Physical Science and Natural Science altogether from the B.A. (Honours) Degree Examination, passed at yesterday's meeting, I beg to hereby give notice that I intend lodging protests under Regulation 64 against those resolutions.

I have the honour to be,

Sir,
Your most obedient servant,
P. V. SESHU AYYAR.

TRIPPLICANE, MADRAS,
24th October 1917.

To

THE REGISTRAR,
University of Madras.

Sir,

With reference to the Resolution XI-iii (2) relating to the dropping of Physical Science and Natural Science from the list of branches of knowledge to be taken by B.A.

(Honours) candidates, which was passed at the meeting of the Senate held on 19th October 1917, I have the honour to lodge the accompanying protest under Regulation 64 of the University of Madras. The notice of my intention to lodge such a protest I have already given within the time prescribed in the same Regulation.

I have the honour to be,

Sir,

Your most obedient servant,
P. V. SESHU AYYAR.

(ii)

A protest against Resolution XI-ii (2) of the agenda passed at the Senate meeting held on 19th October 1917.

The Resolution is that 'Physical Science—either II-A or II-B—and Natural Science be deleted' from the list of branches of knowledge under the B.A. (Honours) Regulations.

The following are the chief objections to the passing of the Resolution (the objections apply mainly to the dropping of Physical Science and not to the same extent to that of Natural Science):

1. The time from which the Resolution is to take effect is not mentioned. In the absence of such specific mention it may be taken to come to effect immediately, in which case, it is needless to say that there will be no Physical Science or Natural Science for the Honours Examination until the B.Sc. (Honours) Examination gets instituted, i.e., till April 1922.

2. The only reason that was assigned for the dropping of these subjects from B.A. (Honours) courses was that the B.Sc. (Honours) courses, specially in Physical Science, are exactly the same as those for the B.A. (Honours) courses and that it is meaningless to have two degrees for one and the same course. This reason is quite sound and one would readily accept the dropping of these sciences from the B.A. (Honours), provided all the Regulations affording facilities for higher studies in connexion with the B.A. (Honours) and M.A. Degrees had also been incorporated with the B.Sc. and M.Sc. Regulations. One such Regulation that has not been so incorporated is Regulation No. 210 (B) which enables a graduate of arts in Physical Science or Natural Science to appear for the B.A. (Honours) Degree Examination in these Sciences and qualify for a higher degree, viz., M.A. (without Honours). The absence of such a provision in the proposed B.Sc. or M.Sc. Regulations makes it impossible for any pass graduate to qualify for a higher degree. As the chief aim of a University is to encourage learning in every way and as it is desirable to create free scope and facilities for all students of capacity to proceed from the lowest to the highest standard of education, the want of such facilities in the B.Sc. (Honours) Regulations must be deplored. And so long as such want remains the Physical Science courses under the B.A. (Honours) Regulations including M.A. (without Honours) which contain such facilities should not be dropped. That such facilities to qualify for a higher degree are being availed of could be seen from the fact that in the two years 1916 and 1917 during which the Regulation for M.A. (without Honours) has been in force, five candidates applied for the examination in these Sciences and two of them got through; and it seems that for the examination of 1918, so many as eight have applied for M.A. (without Honours) in the Science subjects.

3. There are many colleges which are now affiliated in Physical Science under the B.A. (Pass) degree and students who passed the B.A. in Physical Science from such colleges could, under Regulation 201, qualify themselves to appear for the B.A. (Honours) Degree Examination in Physical Science and if Physical Science be dropped from the B.A. (Honours) Regulations such students with Physical Science for their subject will have no chance of qualifying for a higher degree, since there is no provision in the B.Sc. (Honours) Regulations allowing such students to appear after a two years' course for the B.Sc. (Honours) Examination. Thus if the Sciences be dropped from the B.A. (Honours) without making a provision as suggested above, such students will be deprived of the facilities they now have for qualifying for a higher degree. The result will be that ambitious students will be unwilling to take up Physical Sciences for their B.A. and consequently also such colleges as are now affiliated in Physical Science for the B.A. will not attract good students. It may be contended that such colleges may seek affiliation for the B.Sc. in the Sciences where such facilities are provided for. But many of these colleges cannot afford, at any rate in the near future, to seek affiliation for the B.Sc., since three separate branches of knowledge are to be offered for the B.Sc. Pass. This inability on the part of such colleges to seek affiliation for the B.Sc. was well brought out at the meeting of the Senate held in October 1916, when it was proposed to drop these Sciences altogether from the B.A. (Pass) Degree; and for that very reason that proposition was lost.

These objections were raised at the Senate meeting and it was suggested that the matter might be referred to the Syndicate. But since the proposal went in the name of the Committee appointed to draft the B.Sc. Regulations, it was presumed that the Committee must have fully considered all such objections and a reference to the Syndicate was considered unnecessary. But this question of dropping the Sciences from the B.A. (Honours) Courses was not included in the terms of reference to that Committee nor was it in the agenda for the meeting of the Committee at which the draft Regulations for the B.Sc. were discussed and adopted. The question was raised incidentally by some members of the Committee and the proposal was adopted in haste though it was pointed out even then that the question required further consideration since nobody could say on the spur of the moment how far the existing B.A. (Honours) and M.A. Regulations conformed to or clashed with the proposed B.Sc. and M.Sc. Regulations. That the proposal must have been adopted in haste could be seen from the fact (1) that the time from which it is to take effect is not specified, (2) that out of the eleven amendments moved in connection with the B.Sc. (Honours) Regulations, eight were accepted; and had it not been for these accepted amendments the proposed Regulations for the B.Sc. (Honours) would have been wanting in clearness and completeness.

It will, therefore, be seen that the proposal to drop these sciences from the B.A. (Honours) Course was not well considered either by the Committee or by the Senate; and since the B.Sc. Regulations have to take effect only from July 1919, there is no need for hurry in passing this resolution which after all has nothing directly to do with the B.Sc. Regulations. The Resolution is, therefore, one which might well be sent back for reconsideration by the Senate in the light of the above objections.

26th October 1917.

P V. SESHU AYYAR,

(iii)

Memorandum prepared by the Committee of three members of the Senate elected under Regulation 64, in reply to the protest lodged by Mr. P. V. Seshu Ayyar against Resolution XI iii (2) of the agenda passed at the meeting of the Senate held on 19th October 1917 relating to the deletion of Physical Science and Natural Science from the list of branches of knowledge to be taken by B.A. (honours) candidates.

At a meeting of the Senate held on 22nd July 1916, Mr. P. F. Fyson moved and the Rev. A. Moffat seconded: "That to Regulation 187 be added, at the end, the words 'or Bachelor of Science Degree Examination or Bachelor of Science (Honours) Degree Examination.' This motion was equivalent to a proposal for the institution of a B.Sc. course. As an amendment Lt-Col. A. Miller moved and Dr. J. L. Simonsen seconded that a Committee of sixteen members of the Senate be appointed to consider and report upon the advisability of instituting a Faculty of Science and a B.Sc. Degree, the general nature of the courses of study for this degree, and to submit proposals regarding the suggested Faculty of Science and B.Sc. Degree, should the Committee consider it advisable to do so". Three additional members were added to the Committee making nineteen in all and the amendment was accepted by the Senate.

The Committee met on 11th and 24th August 1916 and adopted certain resolutions contained in the annexure hereto. It presented its report to the Senate on 27th October 1916 when the latter body adopted all but one of twelve resolutions based upon the report, the resolution rejected being that for the abolition of the experimental Sciences in the courses for the B.A. Degree and re-appointed the Committee to draft the necessary regulations in accordance therewith and to report to a future meeting of the Senate. The final report was submitted to the Senate at its meeting held on 19th October 1917. It is against one of the resolutions that was adopted by the Senate on the basis of this report that Mr. Seshu Ayyar protests. The resolution reads as follows:—

(a) That in Regulation 198, under "II. One of the following branches of knowledge,"

(i) Physical Science—either ii-A or ii-B.

(iii) Natural Science

be deleted and that the remaining branches be renumbered.

(b) That in Regulation 201, in the last sentence, the words 'and if he appears for the examination . . . B.A. Degree Examination' be deleted.

(c) That in Regulation 207, the syllabuses under

ii-A. Physical Science.

ii-B. Physical Science

(iii) Natural Science.

be deleted and that the remaining subjects and syllabuses be renumbered.

(d) That in Regulation 208, the time-tables for Branch ii-A, Branch ii-B and Branch

iii be deleted, and that the remaining branches and time-tables be renumbered.

(e) That in Regulation 209, the divisions of examination under Branch ii and Branch

iii be deleted and that the remaining branches and divisions be renumbered.

The resolution is that Physical Science (Physics and Chemistry) and Natural Science (Botany, Zoology, Geology and Physiology) be omitted from the B.A. (Honours) course and examination the ground for omission being that provision for the study of these subjects up to an Honours standard is proposed in the B.Sc. regulations.

Mr. Seshu Ayyar's protest is based on the following three main grounds:—

- (1) The time from which the resolution is to take effect is not mentioned.
- (2) All the regulations affording facilities for higher studies in connexion with the B.A. (Honours) and M.A. degrees have not been incorporated with the B.Sc. and M.Sc. regulations.
- (3) No provision is made for students who take the Pass B.A. degree with Physical or Natural Science as optional subjects, qualifying for a higher degree with Science as their special subjects.

He raises the subsidiary objection that these resolutions bearing on the B.Sc. course were not sufficiently well considered by either the committee appointed by the Senate or the Senate itself.

It may be stated at the outset that the committee had in view, when making its recommendations to the Senate, mainly the institution of a B.Sc. course. It was informed that the existing regulations of the University regarding the award of M.A. and M.A. (Honours) degrees were under the consideration of the Syndicate. It did not therefore feel itself called upon to enter into the exceptional cases of transfers of students from a B.A. course in the experimental Sciences to a B.Sc. course or from a B.Sc. course to a B.A. course. It recognized that any suggestion on these lines would be dependent upon the decision of the Syndicate regarding the future of the M.A. and the M.A. (Honours) degrees. That decision has not yet been arrived at and is, we understand, unavoidably postponed pending orders from the Government upon the resolution under protest. The committee recognized that even after the acceptance of its proposals by the Senate additional regulations would be required, some of them temporary, others permanent, in order to make provision for difficulties of interpretation and for cases of a more or less abnormal character which might subsequently arise. Many members of the Senate were of opinion that these defects could and would be remedied by the Syndicate when it considered, as it was bound to consider, the resolutions accepted by the Senate and approved by the Government.

Treating Mr. Seshu Ayyar's objections seriatim, the first is purely technical. It is natural and imperative that such students as have entered upon the B.A. (Honours) course should be given facilities for the completion of that course. Such provision can be made, as it has already been made, when circumstances similar to these under consideration have arisen, by the introduction of Transitory Regulations, provision therein being made for the continuance of the B.A. (Honours) courses in Science until students who began their course in 1918 have completed it.

The second ground for the protest is, really, an objection to an entirely different resolution from the one under discussion and which was also accepted at the last meeting of the Senate, viz., that resolution which accepted the proposed regulations regarding the institution of a degree of Master of Science. Under these regulations the M.Sc. degree is to be awarded to a student who has passed the B.Sc. (Honours) examination, who has worked under supervision for an additional year and who has submitted a satisfactory thesis on original work done. It is therefore essentially different from the M.A. (Honours) degree which is awarded at a Convocation to any one who has passed the B.A. (Honours) degree examination and who after a certain period of time pays the prescribed fee to the University. The M.A. (Honours) degree is awarded without examination or further study. The M.Sc. degree is to be awarded only after further study and submission of a thesis on original work which has been done in the meantime. There is thus no true analogy between the M.Sc. degree and the M.A. degree in Honours. Mr. Seshu Ayyar appears to presume that there ought to be. If students who take the B.Sc. pass degree are desirous of qualifying for the M.Sc. degree they might be permitted to do so by first appearing for the B.Sc. (Honours) examination and if they satisfy the examiners they may then study under supervision for an additional year and submit a thesis on the original work done by them. This is a matter which might well be left to the consideration of the Syndicate which could submit to the Senate any additional regulation required to permit of this being carried into effect. The number of persons who will be affected by such a regulation will be almost negligibly small and it is doubtful whether Mr. Seshu Ayyar would accept such a solution if further attendance at a college were required. Yet such attendance would be a requisite for any successful appearance at an Honours Examination in Science. This difficulty, it is understood, is engaging the attention of the Syndicate in connexion with proposals for an M.A. degree.

The retention of experimental Sciences in the B.A. degree courses was not originally contemplated by the committee, which had in view a complete course in the sciences up to an M.Sc. standard in which a B.A. degree course in Science could find no proper place. The Senate decided, however, that the sciences should be retained in the Arts course. It is

No. 515, Homs (Education), 23rd April 1918

admitted that such retention must be followed by suitable provision for higher studies in Science by Bachelors of Arts, but such provision should not be subversive of sound progressive B.Sc. B.Sc. (Honours) and M.Sc. courses. Mr. Seshu Ayyar's third objection therefore is one which can and ought to be met by the passing of a further regulation, e.g., one which would permit students who have obtained a B.A. degree with Science as their optional subject taking a B.Sc. (Honours) course in two years after taking their B.A. pass course and thus qualifying for the B.Sc. degree in addition to the B.A. degree. This again is a matter for the consideration of the Syndicate.

The subsidiary objection raised by Mr. Seshu Ayyar is one that can be raised to practically every body of regulations which has ever been passed. In fact the existing regulations of this University are considered to be so defective that a Committee of the Syndicate is now sitting for the purpose of revising them *in toto*. It may be noted that Mr. Seshu Ayyar gave notice of fourteen amendments on the B.Sc. course—seven were accepted as merely verbal or consequential alterations, one was not moved by him, another was moved and then withdrawn, four were moved and lost, and one was moved and carried.

There are various other aspects of these regulations which must be considered very shortly. One which has not heretofore been mentioned is whether under any circumstances a Pass B.Sc. may take up a B.A. (Honours) degree course. In Mathematics it seems more than probable that this should be permitted. There is also the question of whether Pass B.A.'s who cannot afford an additional two years' college course should be allowed to appear for the B.Sc. or (as already suggested) the B.Sc. (Honours) examination they are now allowed to appear for the B.A. (Honours) examination as a qualification, for the M.A. degree without honours. These are, however, subsidiary questions and do not affect the main provisions relating to the institution of the B.Sc. course and degree and might well be considered apart from the present resolutions of the Senate.

Finally we wish to emphasize that the committee of the Senate set itself out to draw up courses of study in Science which while being educationally and scientifically sound would qualify the student to take up his position as a useful citizen endowed with such training as would enable him to attack successfully and profitably life's future problems. It has done so and its proposals have been almost *en bloc* accepted by the Senate.

We suggest therefore that the orders of Government be issued sanctioning the changes in the regulations which have been accepted by the Senate as consequential on the institution of a B.Sc. course and degree. The Syndicate will then be in a position to consider in greater detail than has yet been possible the relation of the B.A. to the B.Sc. courses and examinations, to draft such additional regulations as may be necessary and to submit them to the Senate for approval, a function of the Syndicate that is specifically referred to in Regulation 96 (viii) of the Madras University Regulations. It does not appear to be profitable to proceed further in suggesting alterations in and additions to the regulations until the orders of Government issue on the main question, viz., the institution of a B.Sc. course.

R. LITTLEHAILES,
P. F. FYSON,
J. L. SIMONSEN,

IV

Memorandum No. 1372 B-3, Homs (Education), dated 11th January 1918.

The Government consider that they should have the transitory and other regulations contemplated in the reply memorandum of the Senate Committee submitted with the Registrar's second letter read above before orders can be passed on the present regulations.

2. The Syndicate is accordingly requested to be so good as to expedite the framing and submission of the consequential additions to and alterations in the regulations.

R. RAMACHANDRA RAO,
Secretary to Government

To the Registrar, University of Madras.

V

Letter—from F. DEWSBURY, Esq., B.A., LL.B., Registrar, University of Madras.

To—the Secretary to Government, Homs (Education) Department.

Dated—Senate House, the 22nd March 1918.

No.—2060.

With reference to Government Memorandum No. 1372 B-3, dated the 11th January 1918, and the previous correspondence, I have the honour, by direction of the Syndicate, to forward for the sanction of Government under section 25 (1) of the Indian Universities Act, 1904, the enclosed Transitory Regulation, additional

No. 515, Homs (Education), 23rd April 1918

The resolution of the Senate of the University of Madras, passed on the 11th January 1918, in relation to the proposed B.Sc. (Honours) course, is hereby published for the information of the public. The resolution is as follows:—

1. That the B.Sc. (Honours) course be instituted in the University of Madras.

2. That the B.Sc. (Honours) course be instituted in the University of Madras.

3. That the B.Sc. (Honours) course be instituted in the University of Madras.

4. That the B.Sc. (Honours) course be instituted in the University of Madras.

5. That the B.Sc. (Honours) course be instituted in the University of Madras.

6. That the B.Sc. (Honours) course be instituted in the University of Madras.

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regulations, and alteration in the existing Regulation 207, all relating to the proposed courses and degrees in Science, which were adopted by the Senate at its adjourned meeting held on 9th March 1918.

The Transitory Regulation makes provision for the continuance of the B.A. Degree (Honours) examinations in Science only until the new courses and examinations for degrees in Science have come into full operation. The additional regulations provide for Bachelors of Science proceeding later to a higher degree, for Bachelors of Arts proceeding to Science degrees and for Bachelors of Science proceeding to an Arts degree in Mathematics. The proposed alteration in Regulation 207 was referred by the Senate in October last to the Board of Studies in Mathematics for consideration and report. The Board of Studies approved the proposal which removes from the Arts Honours course in Mathematics the options in Applied Mathematics, which will find place in the proposed new B.Sc. (Honours) course, as soon as the latter comes into operation.

UNIVERSITY OF MADRAS.

Resolutions adopted by the Senate at its adjourned meeting held on March 9, 1918.

(a) That the following Transitory Regulation in connexion with the proposed courses and degrees in Science be adopted:—

The examination for the Degree of Bachelor of Arts (Honours) in branches (ii) and (iii) shall be held under the existing regulations in the years 1919, 1920, 1921 and 1922: after the year 1922 the examinations in those branches shall cease, except that an examination shall be arranged, if required, in the year 1923 for candidates appearing in those branches, who have enlisted in the Indian Defence Force and who passed the Intermediate Examination in Arts in the year 1918.

(b) That the following additional regulation in connexion with the proposed courses and degrees in Science be adopted:—

(i) Candidates for degrees in Science who have already qualified for a degree shall be permitted to appear for the examinations in Science under the conditions following:—

(a) A candidate who has qualified for the Degree of Bachelor of Science and desires to qualify for the degree of Master of Science shall be permitted to appear at any time for the examination held for candidates from the degree of Bachelor of Science (Honours) after a two years' course and shall be exempted from re-examination in English and in any subsidiary subject in which he has qualified, for the Degree of Bachelor of Science; in such subsidiary subjects he shall be credited with the percentage of marks obtained in those subjects in the Degree of Bachelor of Science examination.

(b) A candidate who has qualified for the Degree of Bachelor of Arts in Group (i), (ii-A), (ii-B) or (iii) shall be permitted to appear for the Degree of Bachelor of Science (Honours) examination after a two year's course, provided he presents himself for examination in the subjects in which he has already qualified himself for the Degree of Bachelor of Science he shall be exempted from re-examination in English and in the case of Branch (ii) or Branch (iii) from re-examination in Chemistry or Physics respectively, taken as subsidiary subjects, and in the case of Branches (iv), (v) and (vi) from re-examination in any subsidiary subjects, and in which he may have qualified as his main subject in the Degree of Bachelor of Science examination. He shall be credited in each subsidiary subject in which he is exempted with the percentage of marks gained in that subject in the Degree of Bachelor of Science examination.

Such a candidate appearing in Branch (iv), (v) or (vi) shall be permitted to appear in the same year both for his main subject and for his subsidiary subject or subjects in which he is not exempted from re-examination under this Regulation;

A candidate who, under this Regulation, passes the Degree of Bachelor of Science (Honours) examination within four years of passing the Intermediate Examination shall be eligible for the Degree of Bachelor of Science (Honours). A candidate who under this Regulation passes the examination after the expiry of four years from the date of passing the Intermediate examination shall be eligible to qualify for the Degree of Master of Science.

(c) A candidate who has qualified for the Degree of Bachelor of Science in Group (i), (ii-A), (ii-B) or (iii) shall be permitted to appear for the Degree of Bachelor of Science Examination in any three subjects after a one year's course, provided he presents himself for examination in the subjects in which he has already qualified himself for the Degree of Bachelor of Science. He shall be exempted from re-examination in English and from re-examination in the main subject in which he qualified himself for the Degree of Bachelor of Science; in the latter subject he shall be credited with the percentage of marks gained in the Degree of Bachelor of Science examination.

For appt. 4/5
 41
 18-5-18
 5

NOTES CONNECTED WITH G.O. No. 515, HOME (EDUCATION),
 DATED 23rd APRIL 1918

[SUBJECT.—University regulations relating to the institution of a faculty of Science
 and a B.Sc. degree.]

From the Registrar, University of Madras, No. 8018, dated 3rd November 1917.

HOME (EDUCATION) DEPARTMENT.

Submitted that the case may lie over pending receipt of the protest and the
 proposed memorandum referred to in paragraph 2 of the Registrar's letter.

E.A.V.—8-11-17.

T.K.—9-11-17.

C. RAMANUJA ACHARIYAR—10-11-17.

Remind on 28th November.

R. RAMACHANDRA RAO—12-11-17.

A draft memorandum is submitted.

E.A.V.—30-11-17.

T.K.—30-11-17.

C.R.—1-12-17.

[Memorandum No. 1372/B-1, dated 1st December 1917.]

From the Registrar, University of Madras, No. 9089, dated 11th December 1917.

The Syndicate submits for the sanction of Government under section 25 (1) of
 the Indian Universities Act—(i) a new body of regulations providing for courses of
 study and examinations necessitated by the proposed institution of a Faculty of
 Science and a B.Sc. Degree in the Madras University and (2) alterations in the
 existing regulations, for the most part, consequential.

2. There does not appear to be any objection in accepting the regulations in (1).
 In regard to the alterations in (2) however, Mr. P. V. Seshu Ayyar, Professor of
 Mathematical Physics at the Presidency College and a member of the Senate, has
 lodged a protest against the resolution of the Senate providing for the deletion of
 Physical Science—either II A or II B—and Natural Science from the list in Regula-
 tion 198 II, to be taken by B.A. (Honours) candidates. For facility of reference the
 statement prepared and submitted on the succeeding pages exhibits in one view the
 objections raised in the protest and the arguments in the reply * memorandum
 urged in support of the resolution under protest :—

* Prepared by a Senate Committee appointed
 under Regulation 64 and composed of
 Messrs. R. Littlehales, P. F. Fyson and
 J. L. Simonson.

Points of objection in the protest against the Senate
 Resolution.

(Reference on pages 28 and 29, current file.)

(1) The time from which the resolution is to
 take effect is not mentioned and in the absence
 of such specific mention, it may be taken to
 come to effect immediately in which case there
 will be no Physical Science or Natural Science
 for the (Honours) examination until the B.Sc.
 (Honours) Examination gets instituted, i.e.,
 April 1922 (current file in 4) on page 22,
 current file.

Arguments in the reply memorandum in support of the
 Senate Resolution.

(Reference on pages 30 and 32, current file.)

(The defect appears to be admitted).
 Nevertheless it is argued that it is a technical
 objection which can be cured by the introduc-
 tion of transitory regulations providing for the
 continuance of the B.A. (Honours) courses in
 Science until students who begin their courses
 in 1918 have completed it.

26-5-18 Home (Education), 23rd April 1918

(b) A candidate who has qualified for the B.A. Degree in a group other than
 Group (i) (a) or (ii) (a) or (ii) (b) shall be permitted to appear for the B.A. Degree
 after a two years' course; he shall be exempted from re-examination in English.
 (ii) Candidates for Degrees in Arts who have taken a degree in English
 shall be permitted to appear for the B.A. (Honours) Degree after a two years' course and
 shall be exempted from re-examination in English.
 A candidate who has qualified for the B.A. Degree in a group other than
 Group (i) (a) or (ii) (a) or (ii) (b) shall be permitted to appear for the B.A. Degree
 after a two years' course; he shall be exempted from re-examination in English.
 (ii) Candidates for Degrees in Arts who have taken a degree in English
 shall be permitted to appear for the B.A. (Honours) Degree after a two years' course and
 shall be exempted from re-examination in English.
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 Group (i) (a) or (ii) (a) or (ii) (b) shall be permitted to appear for the B.A. Degree
 after a two years' course; he shall be exempted from re-examination in English.
 (ii) Candidates for Degrees in Arts who have taken a degree in English
 shall be permitted to appear for the B.A. (Honours) Degree after a two years' course and
 shall be exempted from re-examination in English.

The regulations provided for the B.A. Degree in a group other than
 Group (i) (a) or (ii) (a) or (ii) (b) shall be permitted to appear for the B.A. Degree
 after a two years' course; he shall be exempted from re-examination in English.
 (ii) Candidates for Degrees in Arts who have taken a degree in English
 shall be permitted to appear for the B.A. (Honours) Degree after a two years' course and
 shall be exempted from re-examination in English.
 A candidate who has qualified for the B.A. Degree in a group other than
 Group (i) (a) or (ii) (a) or (ii) (b) shall be permitted to appear for the B.A. Degree
 after a two years' course; he shall be exempted from re-examination in English.
 (ii) Candidates for Degrees in Arts who have taken a degree in English
 shall be permitted to appear for the B.A. (Honours) Degree after a two years' course and
 shall be exempted from re-examination in English.

Order—No. 515 Home (Education), dated 23rd April 1918.
 Under section 25 (1) of the Indian Universities Act, 1907, the Government
 sanction the regulations for the institution of a Faculty of Science and degrees in
 Science together with the alterations in the existing regulations submitted with the
 Registrar's letter No. 8018, dated 3rd November 1917, and the corresponding
 amendments and alterations in the proposed courses and degrees in
 Science submitted with the Registrar's letter No. 8018, dated 3rd November 1917.
 The regulations provided for the B.A. Degree in a group other than
 Group (i) (a) or (ii) (a) or (ii) (b) shall be permitted to appear for the B.A. Degree
 after a two years' course; he shall be exempted from re-examination in English.
 (ii) Candidates for Degrees in Arts who have taken a degree in English
 shall be permitted to appear for the B.A. (Honours) Degree after a two years' course and
 shall be exempted from re-examination in English.

H. RAMACHANDRA RAO
 Secretary to Government

Points of objection in the protest against the Senate Resolution.

Arguments in the reply memorandum in support of the Senate Resolution.

(Reference on pages 98 and 99, current file.)

(Reference on pages 98 and 99, current file.)

(2) That all the regulations affording facilities for higher studies in connexion with the B.A. (Honours) and M.A. Degrees have not been incorporated with the B.Sc. and M.Sc. regulations.

This objection is really an objection to a different resolution, viz., resolution regarding the institution of a Degree of Master of Science. It is urged that there is no true analogy between the M.A. (Honours) Degree and the M.Sc. Degree. The former is conferred on any one who has passed the B.A. (Honours) Degree examination who after a certain period of time, pays the prescribed fee to the University, while the M.Sc. Degree is awarded to one who passes the B.Sc. (Honours) examination only after his further study for one year and submission of a thesis. It is also stated that the question of providing facilities for B.Sc. pass students to take the M.Sc. Degree is engaging the attention of the Syndicate.

(3) No provision is made for students who take the pass B.A. Degree in Physics or Natural Science as optional subjects qualifying for a higher degree with Science as their special subject.

The defect is admitted and it is stated that the Syndicate can and ought to provide for this by passing a further regulation. This is a matter for the consideration of the Syndicate.

(4) A subsidiary objection that these regulations bearing on the B.Sc. course were not sufficiently well considered either by the Senate Committee or the Senate itself.

This is again admitted with the qualification that this can be said of every body of regulations ever passed so much so that a strong Committee of the Syndicate is now sitting to revise the existing University Regulations *in toto*.

3. It is evident from the foregoing summary that practically every objection taken by Mr. Seshu Ayyar has been accepted. The Committee who have prepared the reply memorandum however suggest that the orders of the Government be issued sanctioning the present regulations and that the Syndicate may be left to frame such additional regulations as may be found necessary and to submit them to the Senate for approval—a function of the Syndicate that is specifically referred to in Regulation 96 (viii) of the University Regulations.

4. The case may now be forwarded to the Director of Public Instruction u.o. for remarks generally on the proposed regulations and particularly with reference to the suggestion at A above.

E.A.V.—18-12-17.

T.K.—22-12-17.

To the Director of Public Instruction u.o. first for favour of remarks.

C. RAMANUJA ACHARIYAR—26-12-17.

OFFICE OF THE DIRECTOR OF PUBLIC INSTRUCTION.

I think that Government ought to have before them the transitory and other regulations necessary before they sanction the present ones. Incidentally an order to this effect would be useful in hurrying up the Syndicate.

J. H. STONE—4-1-18.

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NOTES to G.O. No. 515, HOME (EDUCATION), 23RD APRIL 1918 3
A draft memorandum in the sense of the Director of Public Instruction's note
on the previous page is submitted.
E.A.V.—5-1-18.
T.K.—7-1-18.

C. RAMANUJA ACHARIYAR—9-1-18.
R. RAMACHANDRA RAO—11-1-18.

[Memorandum No. 1372 B/3, dated the 11th January 1918.]

From the Registrar, University of Madras, No. 2060, dated 22nd March 1918.

Please see the transitory regulation and additional regulations now submitted
by the Syndicate on pages 27-29, current file, so as to meet the objections of Mr.
Seshu Ayyar detailed in his protest on pages 28-29, current file. They may be
forwarded to the Director of Public Instruction u.o. for remarks with reference to his
note, dated 4th January 1918 on page 2 supra.

P.R.—5-4-18.
T.K.—6-4-18.

C.R.—8-4-18.

OFFICE OF THE DIRECTOR OF
PUBLIC INSTRUCTION.

The new regulations serve their intended purpose and may be accepted.

J. H. STONE—11-4-18.

HOME (EDUCATION) DEPARTMENT.

A draft order sanctioning the regulations is submitted.

E.A.V.—16-4-18.
T.K.—16-4-18.

C.R.—16-4-18.

For sanction.

R.R.—18-4-18.

P[ENTLAND]—22-4-18.

Issue.

R.R.—22-4-18.

[G.O. No. 515, Home (Education), dated 23rd April 1918.]

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