

THURSDAY, APRIL 18, 1872

THE SECOND REPORT OF THE ROYAL COMMISSION ON SCIENTIFIC INSTRUCTION AND THE ADVANCEMENT OF SCIENCE

THE Commission has just issued its Second Report, dealing with the scientific side of the instruction given in Training Colleges and National Schools, and in the Science Classes at present conducted by the Science and Art Department. The report is so long that it is impossible to give it *in extenso*. It can, however, be easily obtained, and it should be read by all interested in one of the most important questions for England just now. Both with reference to elementary education and the Science Classes the present condition of things is fully stated, and this condition is criticised where, in the opinion of the Commissioners, criticism is necessary. The provisions of the new code we may refer to as a case in point.

The Report concludes with the following recommendations:—

SCIENTIFIC INSTRUCTION IN TRAINING COLLEGES AND ELEMENTARY DAY SCHOOLS

I. We recommend, as regards the elder children in the elementary schools, that the teaching of such rudiments of physical science as we have previously indicated should receive more substantial encouragement than is given in the regulations of the new code.

II. We recommend, as regards the younger children that Her Majesty's Inspectors should be directed to satisfy themselves that such elementary lessons are given as would prepare these children for the more advanced instruction which will follow.

III. We recommend that the mode of instruction of pupil teachers, the conditions of admission to training colleges, the duration of the course of study in them, and the syllabus of subjects taught, should be so modified as to provide for the instruction of students in the elements of physical science.

SCIENTIFIC INSTRUCTION IN SCIENCE CLASSES UNDER THE SCIENCE AND ART DEPARTMENT

IV. We recommend that the instruction in Elementary Science Classes under the Science and Art Department, be so arranged as to work in complete harmony with the general system of public elementary education, but, at the same time, we consider it important that the Education Department and the Department charged with Instruction in Science shall continue to be co-ordinate.

V. We recommend that a more efficient inspection of Elementary Science Classes be organised, and that the inspectors should advise the local committees and report on:—

- (a) The apparatus of instruction.
- (b) The state of the discipline and methods.
- (c) The general efficiency of the arrangements.

VOL. V.

VI. We recommend that teachers who have already qualified by passing the May examination in either of the advanced classes shall continue to be recognised as qualified to conduct Elementary Science Classes, with the title of Elementary Science Teacher, and to earn the grants awarded by the Department of Science and Art on the results of the examination of their scholars; but that this qualification and title shall in future only be attainable by passing in the first of the advanced classes.

VII. We recommend that should such arrangements as are hereinafter set forth for conducting the practical instruction of teachers, and for providing for them practical examination at several centres, be adopted, all elementary science teachers shall, after such practical instruction, be admissible to a further examination, which, in all suitable subjects, shall be practical. We recommend that success in this examination shall entitle a teacher to a certificate of Second Grade Science Master.

VIII. We recommend that, as an inducement to teachers to prepare for and pass this further examination, payment for results in the case of a Second Grade Science Master be made at a somewhat higher rate than in that of the Elementary Science Teacher.

IX. We recommend that an examination, both by papers and by practical tests, in any group of allied subjects defined by the Department which the candidate may select, shall be open to all those teachers who have passed in the advanced classes, or who have been otherwise admitted as Science Teachers; and that success in this examination shall entitle the candidate to receive a certificate of First Grade Science Master in that group.

X. We recommend that a greater capitation grant be payable in respect of the scholars of a First Grade Science Master teaching in any group of allied subjects with or without assistance, than in respect of the scholars of a Second Grade Science Master, provided that the Inspector report that the apparatus is sufficient, and that practical instruction has been given in each suitable subject.

XI. We recommend that, with a view of maintaining uniformity of standard in these examinations, they shall be conducted at the several local centres by the staff of Examiners acting under the Science and Art Department.

XII. We recommend that the more systematic training of the teachers of science referred to, be provided for:—

- (a) By the adoption of special arrangements for this purpose in the Science School which has been referred to in our First Report; and by the recognition by the Department of similar arrangements for the instruction of this class of students in any University or College, and in Science Schools as hereinafter described.
- (b) By giving to the students of Training Colleges the opportunity of remaining a third year, during which scientific instruction may either form a principal part of the curriculum of such Colleges, or be accessible in some adjacent College or School of Science approved as efficient for that purpose.

XIII. We recommend that the Science and Art Department be at liberty to dispense with the preceding exami-

c c

nations, and to accord the privilege of First and Second Grade Science Masters in consideration of University Examinations in Science, or of a satisfactory course of study in colleges in which science is taught, as well as in other cases of obvious scientific qualification.

XIV. We recommend that in schools recognised as Science Schools, as hereinafter set forth, facilities for the employment of assistant teachers be afforded as an experiment on a limited scale, some addition being made to the emoluments of the teacher in consideration of the instruction afforded; provided the Department be satisfied, on the report of an inspector, that such assistant teacher has received practical instruction in subjects in which it is prescribed, and that he has been actively engaged in teaching.

To encourage the more advanced scholars to become assistant teachers under first grade masters in such schools, a small stipend, rising in successive years, might be granted on condition that a like sum was raised locally, subject to such conditions as the Department might deem expedient. The proportion of assistant teachers should not exceed one for every fifteen successful scholars in any science school, and no scholar should be recognised as an assistant teacher until he has passed in the first division of the elementary class in the May examination.

XV. We recommend that, with a view of training First Grade Science Teachers, exhibitions of sufficient value and in sufficient numbers be offered to elementary science teachers and to assistant teachers who have served three years, and passed in the first division of the advanced class in the May examinations; and that such exhibitions should be tenable in any University, College, or Science School recognised in Recommendation XII.

XVI. We recommend that the grants made by the Science and Art Department for buildings be extended, under sufficient guarantees, so as to embrace institutions for scientific instruction, although they may not be built under the Public Libraries Act, or be in connection with a School of Art.

XVII. We recommend that grants similar to those now made for apparatus be given for laboratory and museum fittings under proper guarantees.

XVIII. We recommend that whenever the arrangements for scientific teaching in any institution shall have attained a considerable degree of completeness and efficiency, such institution be recognised as a Science School, and be so organised as to become the centre of a group of Elementary Science Classes; and to provide the assistance of First Grade Science Masters, the loan of apparatus and specimens, and the means of instruction in the laboratories and museums to the more advanced students of the group.

XIX. We recommend that assistance be given for the formation and maintenance of such Science Schools by special grants, the conditions of which shall be determined by regulations to be framed by the Science and Art Department.

XX. We recommend that when laboratories are attached to second grade grammar schools in the schemes issued by the Endowed Schools Commissioners, the trustees of such schools be encouraged and enabled to invite the formation of elementary science classes to be taught therein.

AMERICAN WAR-OFFICE REPORTS

Report on Barracks and Hospitals, with Descriptions of Military Posts. War Department, Surgeon-General's Office, Washington, December 5, 1870; pp. 525.

Approved Plans and Specifications for Post Hospitals. Surgeon-General's Office, Washington, July 27, 1871; pp. 14.

THESE two documents are intended to fulfil for the United States army the same purpose as the Reports of the Royal Commissions of 1857 and 1863 on the sanitary state of the British and Indian armies, and the Report of the Barrack and Hospital Improvement Commission were intended to fulfil for Her Majesty's troops serving at home and abroad.

The first document contains an excellent general report by Assistant-Surgeon Billings, followed by a digest of reports from the posts of the United States army scattered all over their territory. These reports, besides dealing with the general sanitary condition and diseases of troops, are full of interesting general information regarding local topography, surface geology, hydrography, meteorology, and natural history, having reference to 151 points and districts of the country extending from the lakes to the mouths of the Mississippi, and from the east of Maine to the far west of Oregon and California. The reports are illustrated by topographical plans, showing the outlines of the more important localities, and also by plans and details of barrack and hospital arrangements.

The most common diseases to which troops are liable are malarial fevers, catarrhal affections, diarrhoea, and dysentery. Malaria appears to exist more or less in all the military "departments," while in Arizona it produces results of more importance to efficiency than this pest does in India.

The purely medical details are of more interest to professional readers, but it is evident that most of the officers who have supplied the local information have been fully alive to the importance of scientific questions generally, and hence these reports may be advantageously consulted by persons interested in the physical geography of this division of the American continent. In Mr. Billings's report the general results of these district inquiries are given, and the principles of local improvements are discussed. Those referring to post hospitals are embodied in the "approved plans and specifications," which show simple, efficient, and economical, methods of erecting hospitals of the denomination required. The plans are generally the same as those proposed by the Army Sanitary Committee in this country, but they contain one or two of those ingenious adaptations of principles for which our transatlantic cousins are famous. One of the great difficulties in American climates is to keep apartments sufficiently heated and yet to preserve the air from contamination.

In improved barracks and hospitals at home this has been effected by a peculiar form of fire grate, contrived by Captain Galton, which, while retaining the advantages of the open radiating fire, supplies the room with a large body of fresh air warmed to about 60° F., the chimney draught being used as a means of removing foul air from the room. A modification of this contrivance for burning wood is figured in the report on the Sanitary Improve-