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LONDON, 1884.

THE

HEALTH EXHIBITION LITERATURE.

VOLUME XVII.

SPECIAL CATALOGUE OF THE EDUCATION DIVISION.

CATALOGUE OF MANUFACTURES, DECORATIONS AND DESIGNS.

LIBRARY CATALOGUE.

CATALOGUE ISSUED BY THE SANITARY BUREAU OF JAPAN.

CATALOGUE WITH EXPLANATORY NOTES FROM THE EDUCATION DEPARTMENT OF JAPAN.

GENERAL OUTLINES OF EDUCATION IN JAPAN.

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BY
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INTERNATIONAL HEALTH EXHIBITION,
AND 13, CHARING CROSS, S.W.
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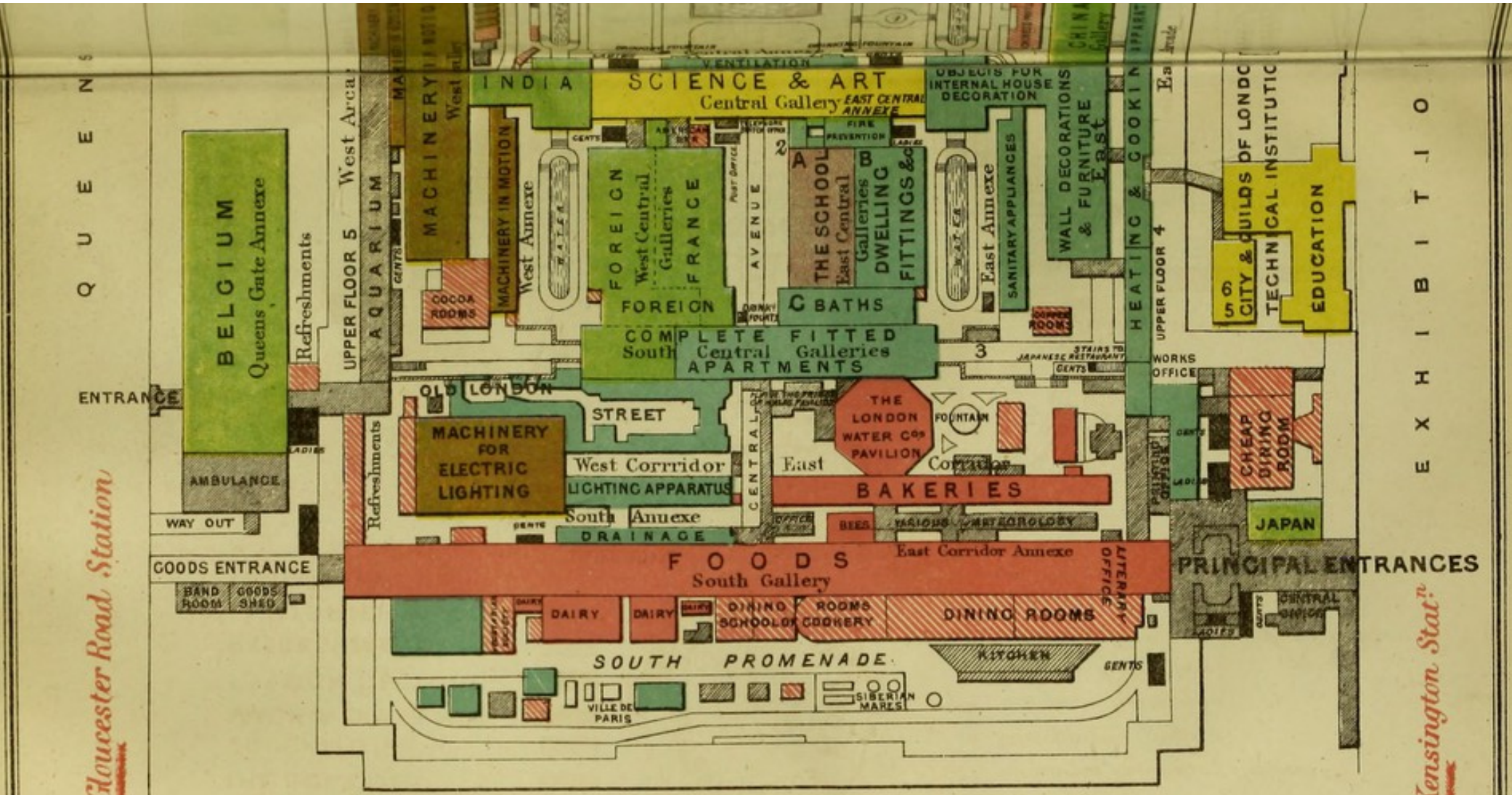

GENERAL PLAN

INTERNATIONAL HEALTH EXHIBITION, LONDON, 1884.

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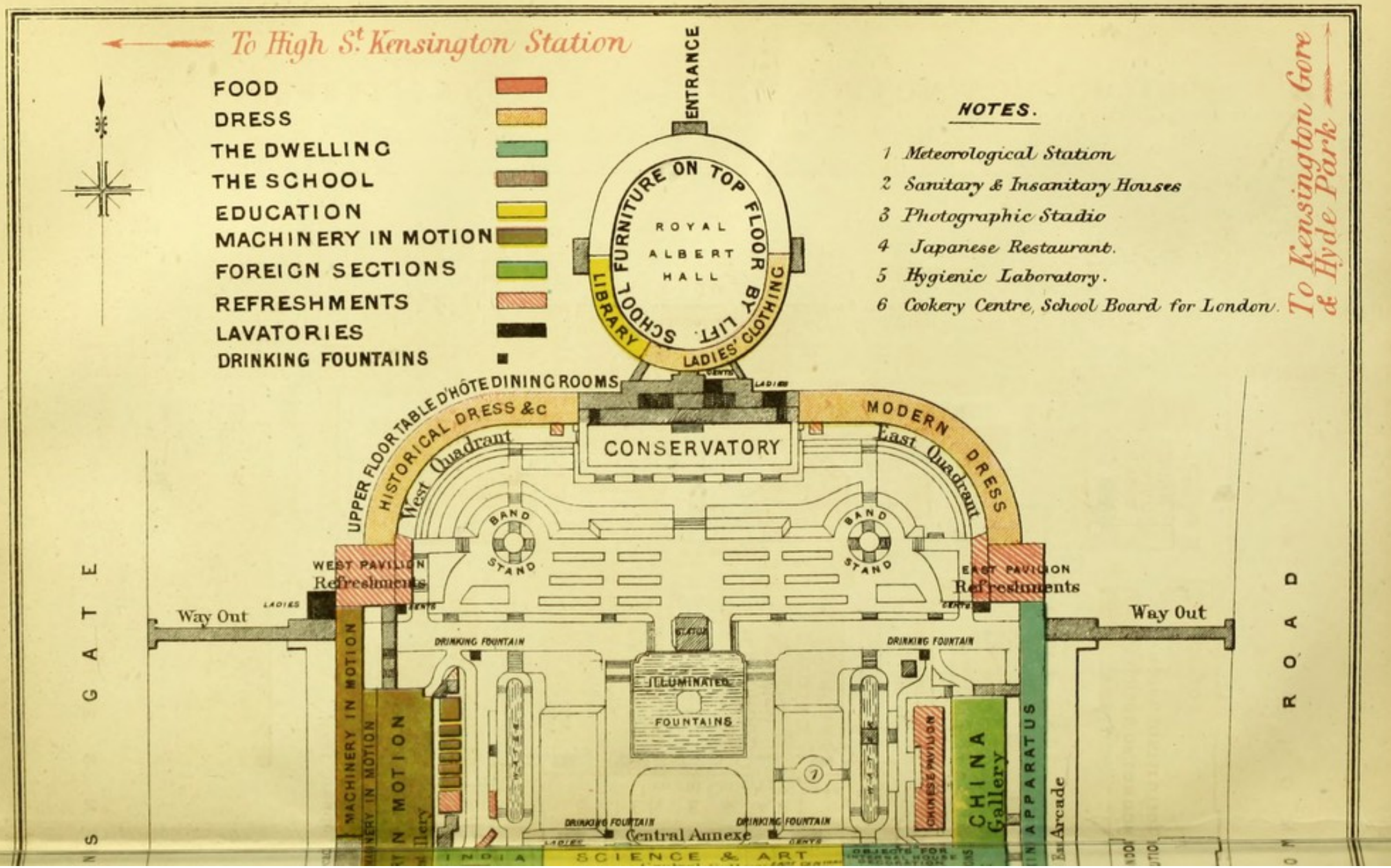
Wilson Bennison, Surveyor to the Executive Council.


To High St. Kensington Station
FOOD
DRESS
THE DWELLING
THE SCHOOL
EDUCATION
MACHINERY IN MOTION
FOREIGN SECTIONS
REFRESHMENTS
LAVATORIES
DRINKING FOUNTAINS
ENTRANCE
ROYAL ALBERT HALL
SCHOOL FURNITURE ON TOP FLOOR BY LIFT.
LIBRARY
LADIES' CLOTHING
NOTES.
1 Meteorological Station
2 Sanitary & Insanitary Houses
3 Photographic Stadio
4 Japanese Restaurant.
5 Hygienic Laboratory.
6 Cookery Centre, School Board for London.
To Kensington Gore & Hyde Park
UPPER FLOOR TABLE D'HÔTE DINING ROOMS
HISTORICAL DRESS &c
West Quadrant
CONSERVATORY
MODERN DRESS
East Quadrant
BAND STAND
BAND STAND
WEST PAVILION Refreshments
EAST PAVILION Refreshments
Way Out
Way Out
LADIES
GENTS
DRINKING FOUNTAIN
DRINKING FOUNTAIN
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MACHINERY IN MOTION
MACHINERY IN MOTION
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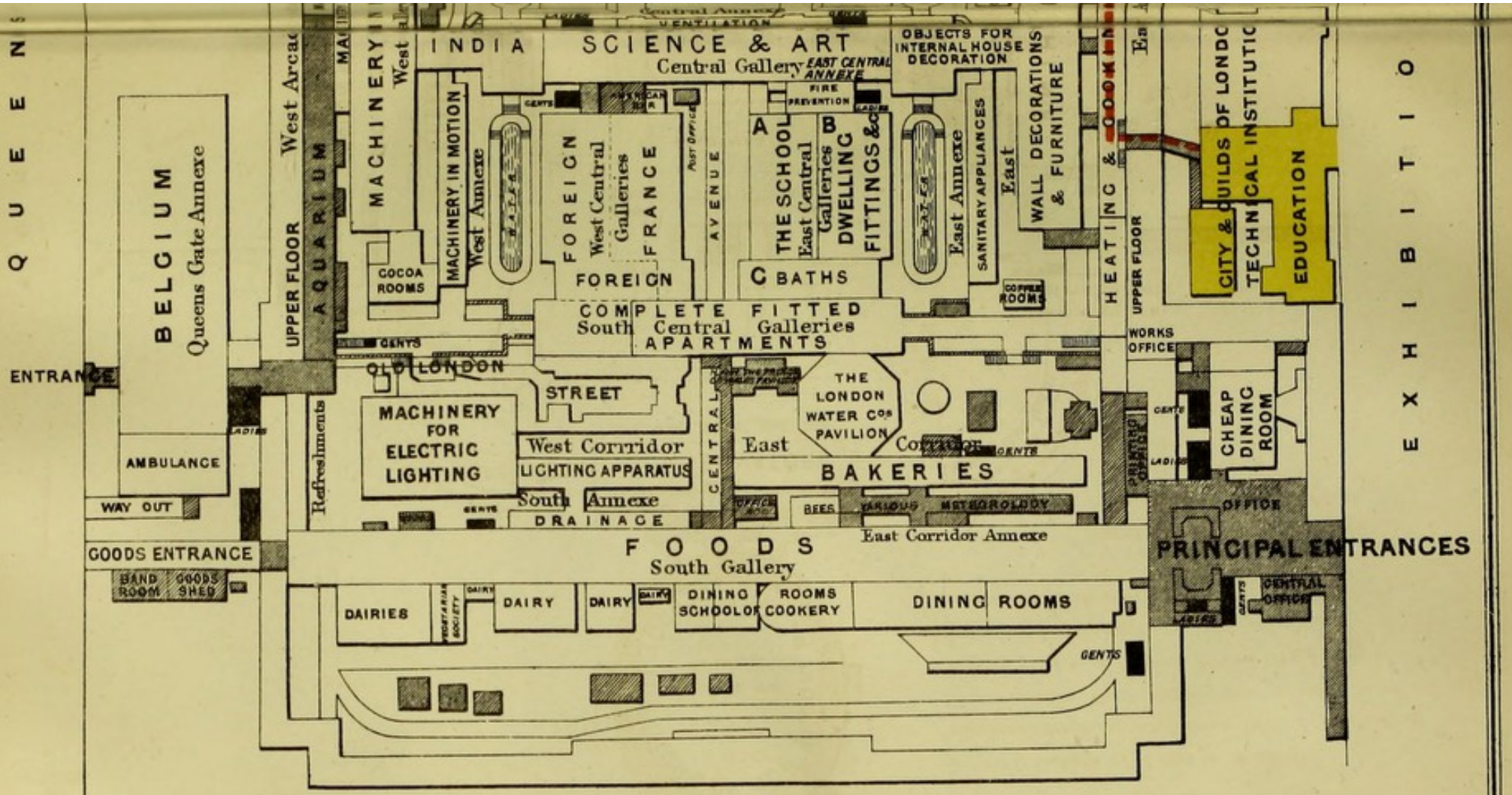
CHINA Gallery
APPARATUS
Arcade
DRINKING FOUNTAIN
DRINKING FOUNTAIN
Central Annexe
INDIA
SCIENCE & ART
OBJECTS FOR
GATE
ROAD



BLOCK PLAN.

SHOWING POSITION OF EDUCATIONAL EXHIBITS (COLORED YELLOW.)

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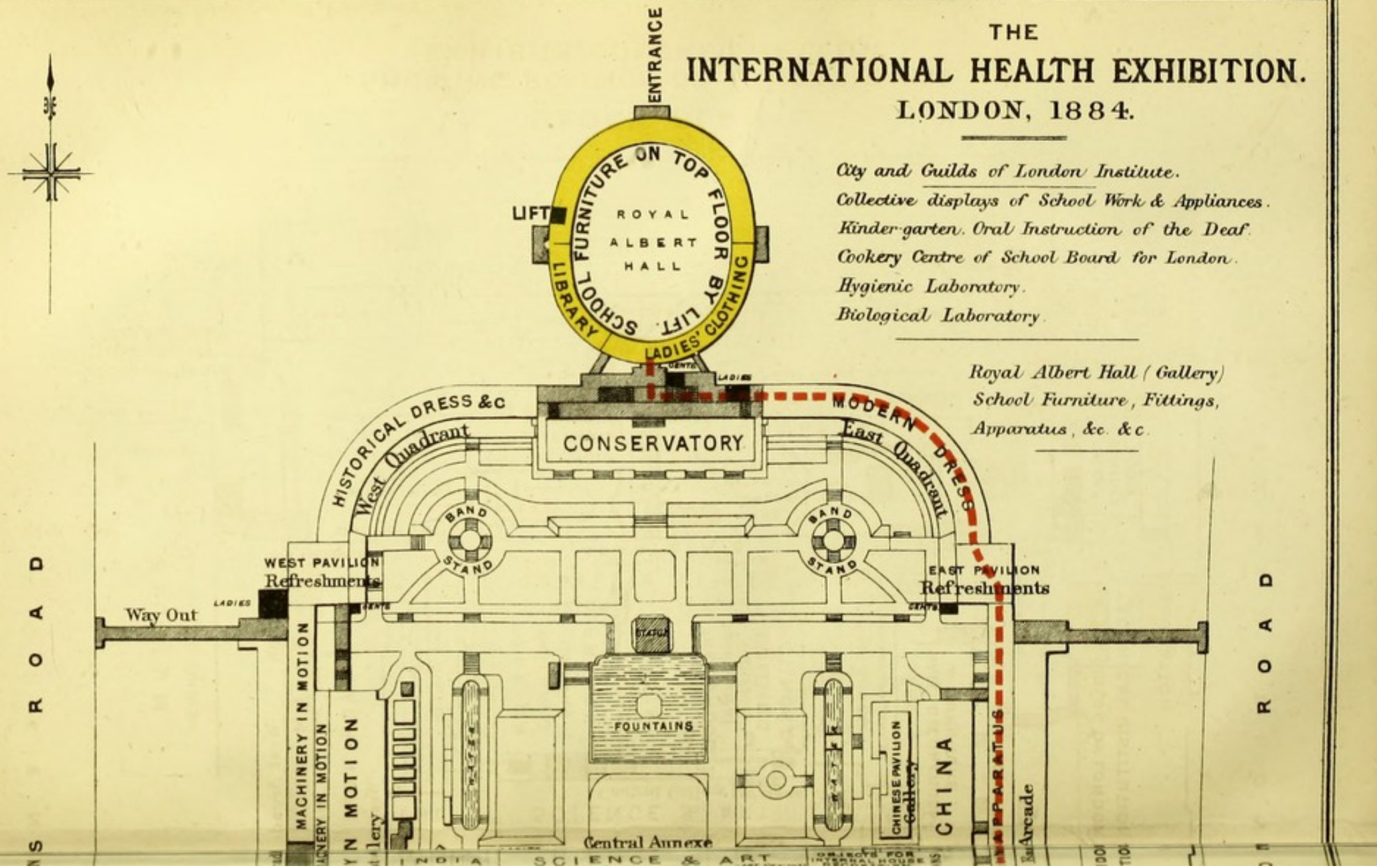
Wilson Bennison, Surveyor to the Executive Council.

THE INTERNATIONAL HEALTH EXHIBITION.

LONDON, 1884.

City and Guilds of London Institute.
Collective displays of School Work & Appliances.
Kinder-garten. Oral Instruction of the Deaf.
Cookery Centre of School Board for London.
Hygienic Laboratory.
Biological Laboratory.

Royal Albert Hall (Gallery)
School Furniture, Fittings,
Apparatus, &c. &c.

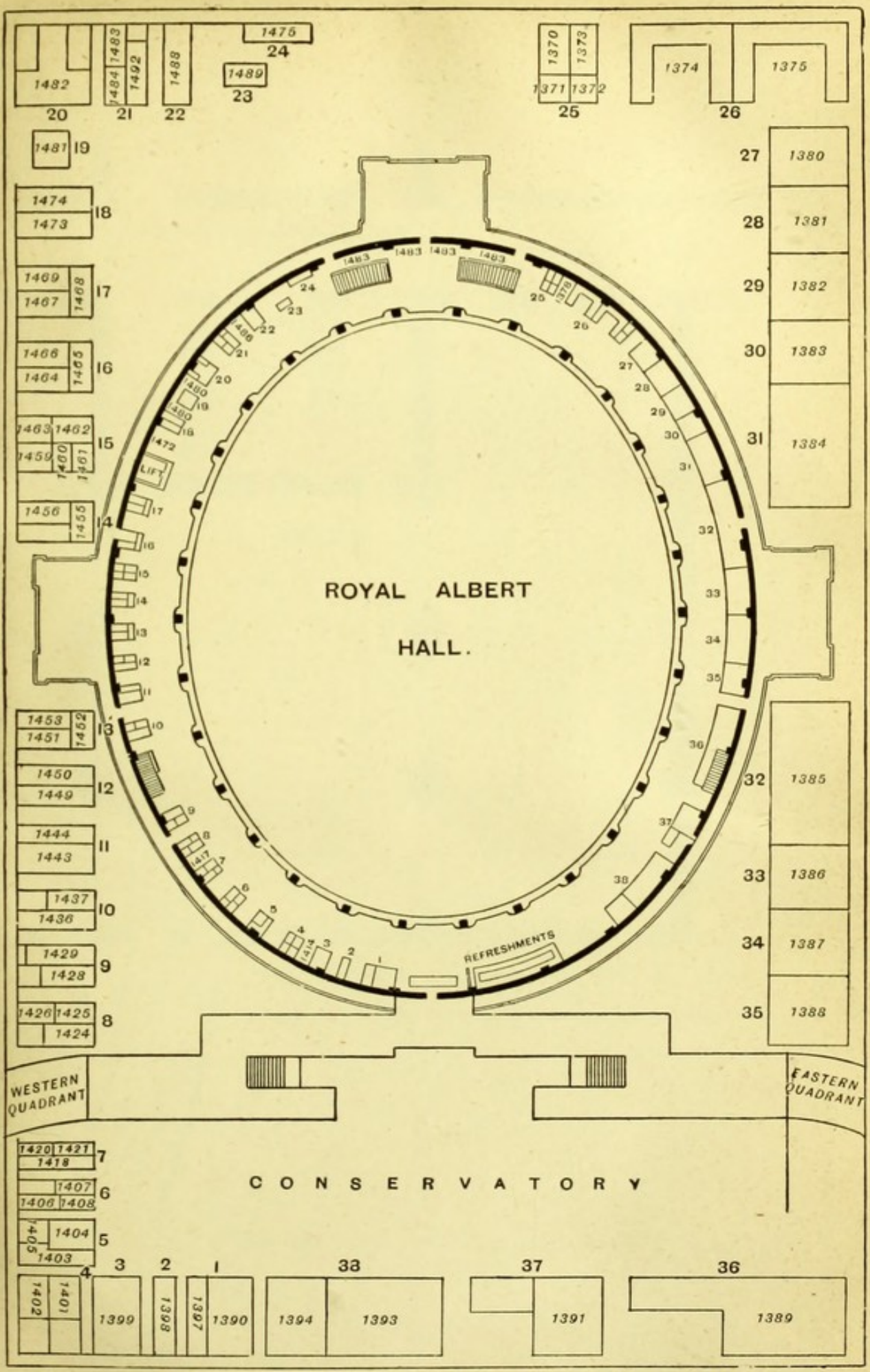


New Building of the City and Guilds Institute for Technical Education, Exhibition Road, South Kensington

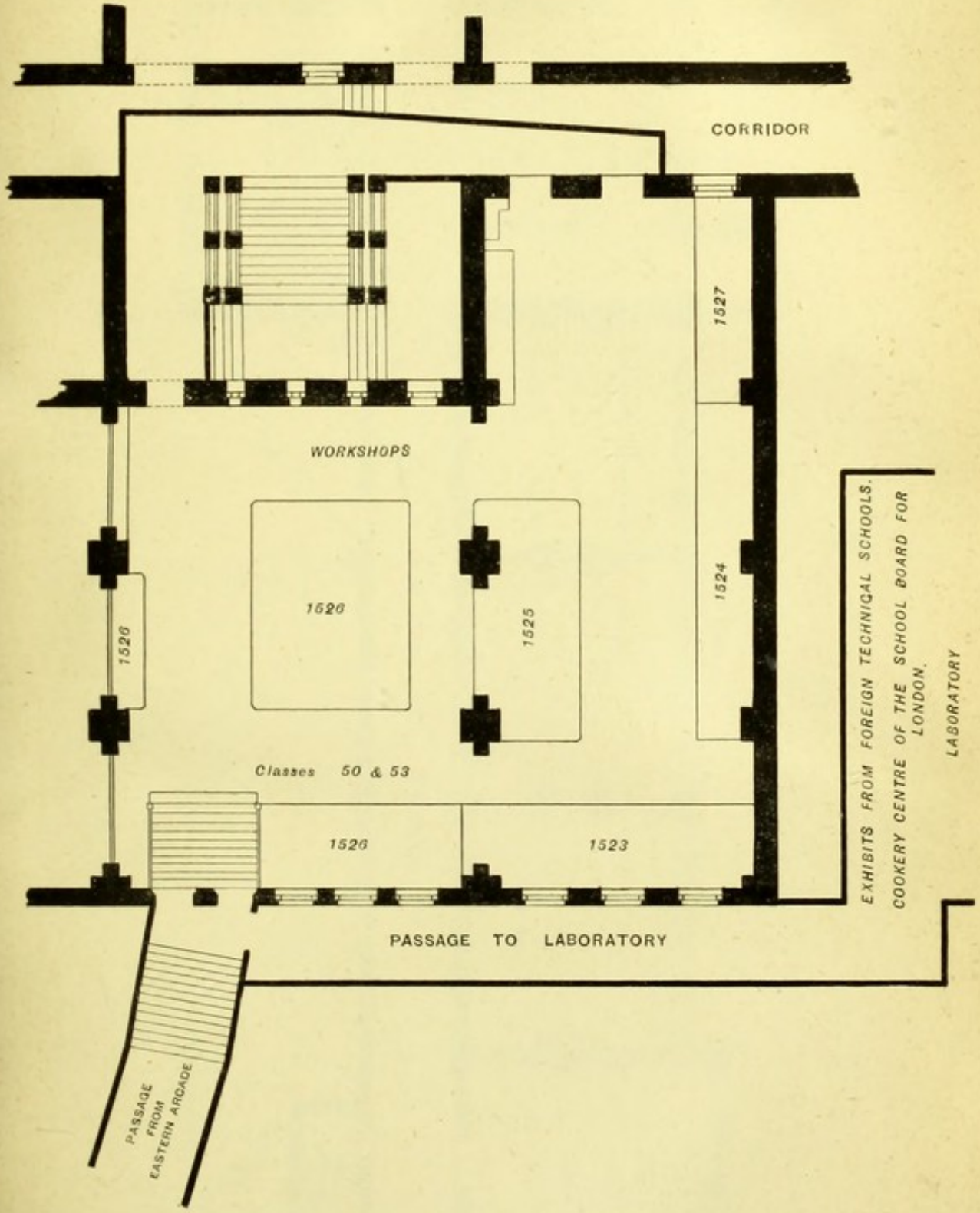
SPECIAL CATALOGUE

OF THE

EDUCATION DIVISION.

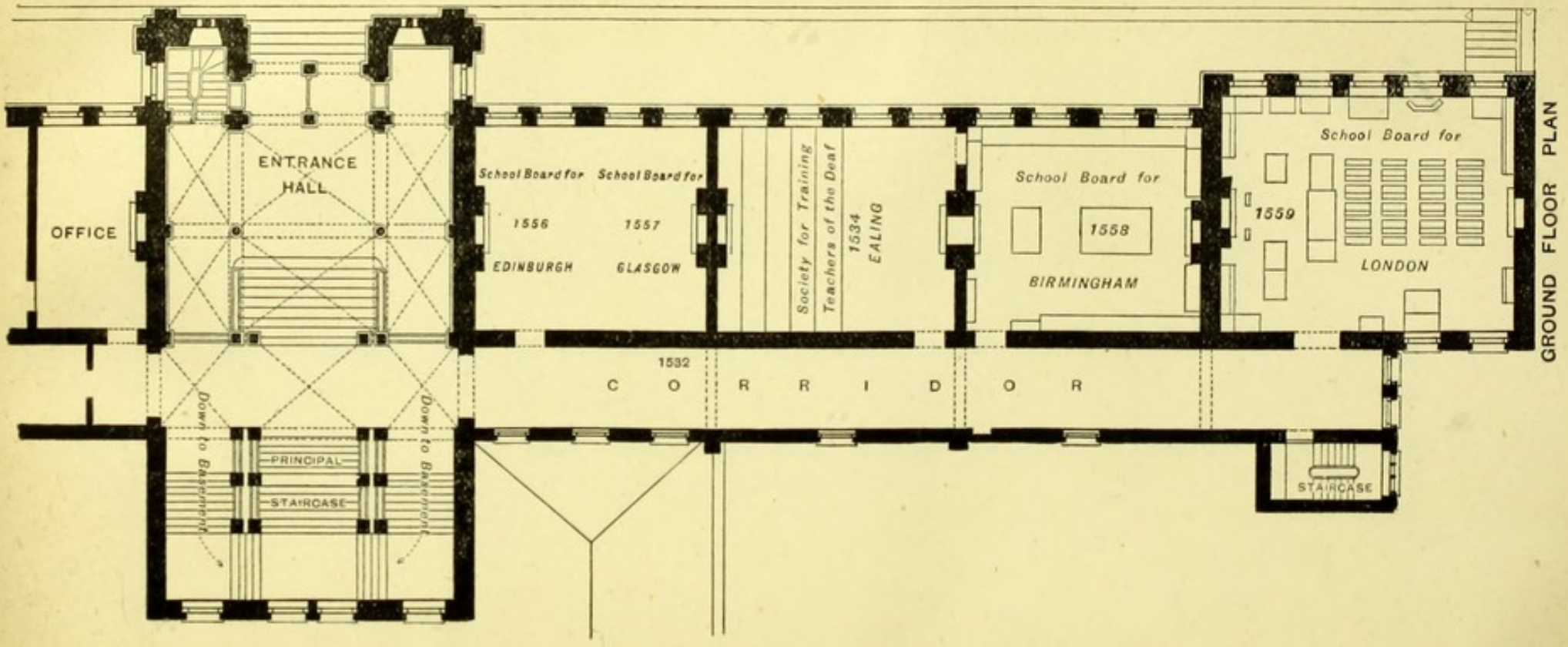


PLAN SHOWING POSITION OF EDUCATIONAL EXHIBITS IN THE UPPER GALLERY OF THE ROYAL ALBERT HALL.



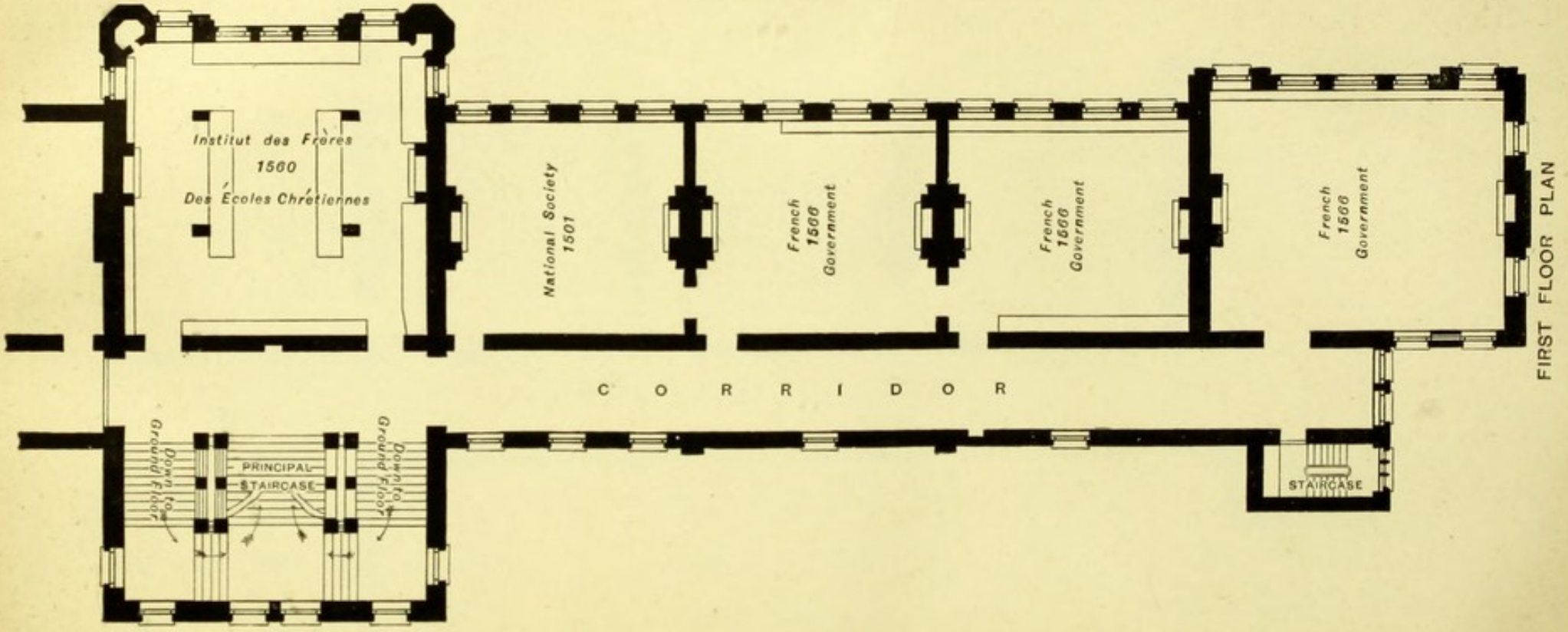
CITY AND GUILDS OF LONDON INSTITUTION.
(*Basement Plan.*)

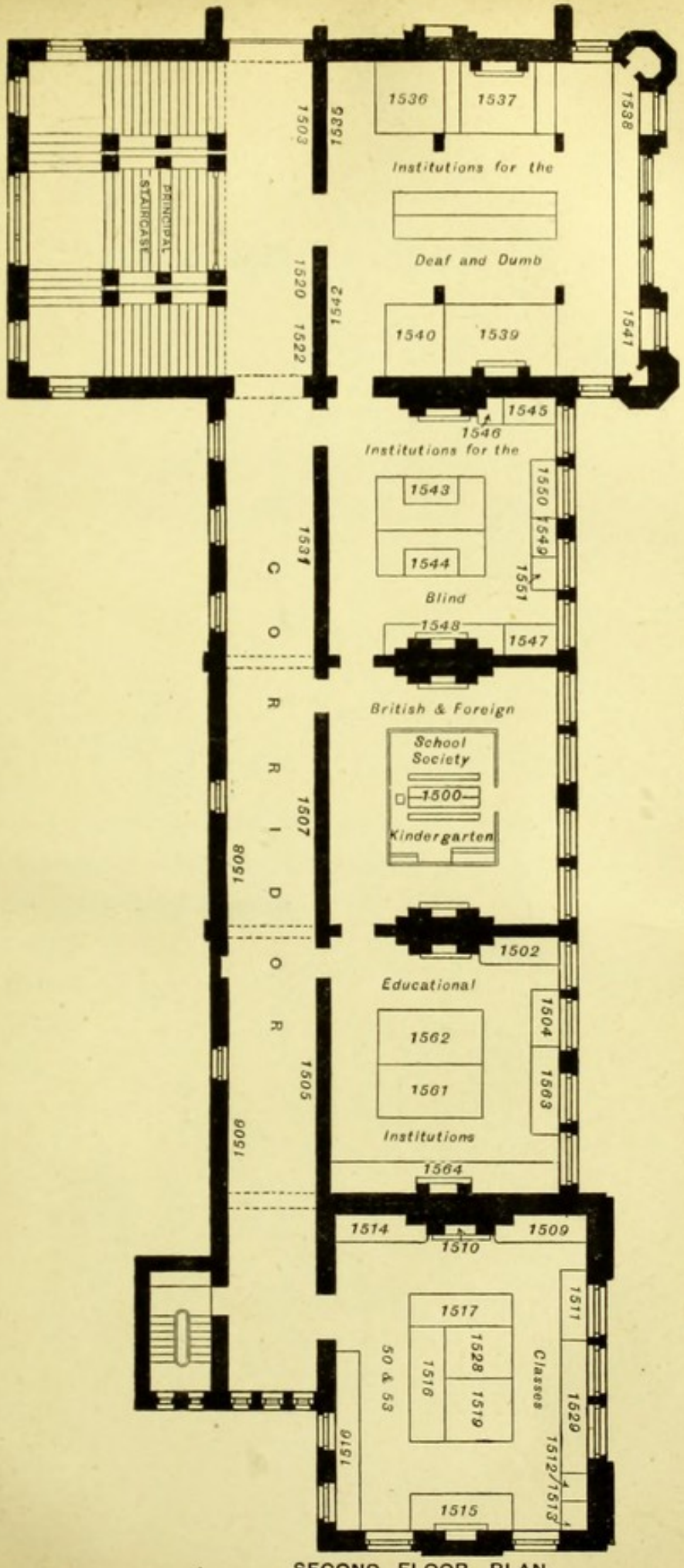
CITY AND GUILDS OF LONDON INSTITUTION.
(Ground Floor Plan.)



CITY AND GUILDS OF LONDON INSTITUTION.

(First Floor Plan.)





SECOND FLOOR PLAN

CITY AND GUILDS OF LONDON INSTITUTION.
(*Second Floor Plan.*)

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REGULATIONS.

1. An International Health Exhibition, under the patronage of Her Majesty the Queen and the presidency of His Royal Highness the Prince of Wales, will be held in London in 1884.

Date. 2. The Exhibition will be opened on the 8th of May, and will continue open for a period of about six months.

Objects. 3. The principal objects to be exhibited are comprised in the accompanying classification, which is intended to illustrate chiefly Food, Dress, the Dwelling, the School and the Workshop, as affecting the conditions of healthful life, and also the most recent appliances for Elementary School Teaching and Instruction in Applied Science, Art and Handicrafts.

Rewards. 4. Medals in Gold, Silver and Bronze, and Diplomas of Honour will be awarded on the recommendation of International Juries.

Expenses to be borne by Exhibitors. 5. No charge will be made for space, but Exhibitors will have to pay every expense of transit, delivery, fixing and removing their Exhibits, and erection of counters when required, and they must, either personally or by their agents, superintend the despatch, transmission, reception, unpacking, and installation, and at the close of the Exhibition the removal of their goods; in default thereof the Executive Council reserve to themselves the right of doing whatever may be considered necessary, and at the expense of the Exhibitor. Should any goods be deposited in the Exhibition premises during the absence of the Exhibitor or his Agent, the Executive Council will not be responsible for any loss or damage, from whatsoever cause arising.

Applications. 6. Applications for allotment of space must be made on printed forms, which will be supplied on application to the Secretary, International Health Exhibition, South Kensington, S.W., which must be filled up and returned on or before the 1st February, 1884. After this date no application will be received.

Full description. 7. The nature of the articles which it is proposed to exhibit must be fully specified in the Form of Application for space.

Allotment. 8. The applications will be laid before the Executive Council, and the Secretary will, as soon as practicable, notify to applicants their decision with regard to the amount of space, if any, allotted to them.

Right to refuse exhibits. 9. The Executive Council reserve to themselves the absolute right of refusing to admit any exhibit.

Foreign countries. 10. The Foreign and Colonial Commissioners appointed by their Government are invited to communicate with the Secretary. They will be charged with the consideration of all questions relative to the distribution of the space allotted to their respective countries, and the Executive Council will place at their disposal all information and plans that may be useful to them.

11. The applicants for space from countries in which no Commissioner has been appointed will correspond directly with the Secretary.

Railway rates. 12. The Executive Council will endeavour to obtain from the various English Railway Companies, special terms for the conveyance of exhibits to and from the

Exhibition, and should they succeed in doing so, such arrangements will be communicated to intending Exhibitors.

Marks on packages. 13. All packages containing goods intended for exhibition must have painted on them the distinctive mark I. H. E., together with the name and address of the Exhibitor. Labels will also be forwarded to each Exhibitor.

Labels.

Foreign packages. 14. Packages from Foreign Countries must likewise have painted on them the letters I. H. E. They must all be marked in such a way as to show distinctly from whence they come, the name of the country, and of the Exhibitor.

Dimensions of cases &c. 15. All cases, counters, platforms, &c., must not exceed the following dimensions, without special permission :—

Show cases and partitions	10 feet	above the floor.	
Counters	3 „	„	„
Platforms	1 foot	„	„

Railings. 16. Exhibitors may place railings around their stands, subject to approval ; but in every instance the railings must be within the area of the "stand," *i.e.* the space allotted.

Flooring. 17. The flooring must not be altered, removed, or strengthened for the convenience of arrangement, except by sanction of the Executive Council, and at the expense of the Exhibitor.

Obstructions. 18. No Exhibitor will be permitted to display exhibits in such a manner as to obstruct the light or impede the view along the open spaces, or to occasion inconvenience, injury, or otherwise disadvantageously affect the display of other Exhibitors.

Decorations. 19. In order to ensure uniformity of decoration and general good effect, no Exhibitor will be allowed to put up any flags, banners, or other kind of decoration without special permission.

Signs. 20. Signs or name-boards must be placed parallel with the main passages, that , parallel with the frontage of the respective stands. These must be black with gold letters, and must be hung subject to the approval of the Council.

Handbills. 21. All handbills, printed matter, &c., connected with exhibits for gratuitous distribution, must first receive the approval and permission of the Executive Council, which permission may be withdrawn at any time.

Empty cases. 22. Cases must be unpacked as fast as possible, and the empty cases taken away by the Exhibitors or their Agents. The Executive Council decline to accept any responsibility with reference to empty cases, which must be at once removed from the building at the expense of Exhibitors.

Attendance. 23. Exhibitors will be required to provide all necessary attendance and to keep their stands and exhibits properly cleaned and in good order during the whole period of the Exhibition.

Non-transfer. 24. No Exhibitor will be allowed to transfer any allotment, or to allow any other than his own duly-admitted exhibits to be placed thereon, except by permission of the Executive Council.

Name. 25. All goods exhibited must be in the name of the person who signed the application form.

Selling price. 26. Exhibitors are requested to mark the selling price of the articles exhibited, so as to facilitate the judgment of the Jury, as well as for the information of visitors.

Removal. 27. Objects cannot be taken away before the close of the Exhibition without the special permission in writing of the Executive Council. Special arrangements will be made with regard to perishable exhibits.

Refreshments. 28. As refreshments come within the scope and classification of this Exhibition, all methods of preparing the same, whether by cookery or otherwise, and the display and sale thereof, will be matters of separate arrangement with those wishing to be represented in this Section of the Exhibition.

Machinery. 29. Exhibitors of apparatus requiring the use of water, gas or steam are requested to make application to the Secretary for a special form, which has been prepared for this Section of the Exhibition.

Stoves, grates, &c. 30. All stoves, grates, &c., must be arranged with a view to the abatement of smoke.

Dangerous substances. 31. All fulminating and explosive substances, and all dangerous substances, are absolutely forbidden to be sent.

Spirits, &c. 32. Spirits, alcohol, oils, essences, corrosive substances, and generally all substances which might spoil other articles or inconvenience the public, can only be received in solid and suitable vessels of small size.

Catalogue. 33. The Executive Council reserve the sole right of compiling a catalogue of the exhibits under regulations which will be duly notified. Each nation will, however, have the right to produce, at its own expense, a catalogue of all the objects in its own Section.

Testing and analysing. 34. The Executive Council reserve to themselves the right of causing any of the exhibits to be examined, tested or analysed for such use as they may think fit.

Photographing, &c. 35. No article exhibited may be photographed, drawn, copied or reproduced, in any manner whatsoever, without the special sanction of the Exhibitor and of the Executive Council.

Non-liability. 36. The Executive Council will not hold themselves responsible for loss or damage occurring to any exhibit from any cause whatsoever; but while declining any responsibility, it is the intention of the Council to take such precautions as they deem necessary.

Date of reception. 37. No goods can be sent in previous to the 15th March without special permission; after the 15th April no goods will be received.

Right to alter rules. 38. The right to add to, alter, amend or expunge any of these Rules is reserved by the Executive Council.

Rules binding. 39. Both Englishmen and Foreigners in becoming Exhibitors declare by so doing their compliance with the whole of these Regulations, together with such other Regulations as the Executive Council may issue from time to time.

Right of removal. 40. The Executive Council reserve the right to remove the objects belonging to any Exhibitor who may not conform to the Regulations.

Non-liability. 41. If any damage or injury shall be caused or occasioned during the Exhibition by any exhibited machine, implement, or article to any visitor or other person, or to any officer, servant, or others then and there employed by the Executive Council of the International Health Exhibition, 1884, then the Exhibitor to whom such machinery, implement, or article may belong shall indemnify and hold harmless the said Council from and against all actions, suits, expenses and claims on account or in respect of any such damage or injury which may be so caused or occasioned.

CLASSIFICATION.

DIVISION I.—HEALTH.

Group 1.—FOOD.

Class 1. Selected Displays of Unprepared Animal and Vegetable Substances used as Food in various countries. Stuffed Specimens of Animals, Birds, &c. Models, Drawings, and Illustrations of the same.

" 2. Prepared Vegetable Substances used as Food, including Tinned, Compressed and Preserved Fruits and Vegetables. Bread, Cakes, and Biscuits of all kinds. Tobacco.

" 3. Prepared Animal Substances used as Food in a preserved form—Tinned, Smoked, Salted, Compressed and Prepared Animal Foods of all kinds; Food produced by Insects, such as Honey, &c.

" 4. Beverages of all kinds—(*a*) Alcoholic; (*b*) Non-alcoholic; (*c*) Infusions (tea, coffee, cocoa, chocolate, &c.)

" 5. New Varieties of Food. Food for Infants, Food for Invalids, New Concentrated Foods of all kinds.

" 6. Cookery Practically Demonstrated. Economical Cooking, Workmen's and other Kitchens, Cheap Restaurants, Bakeries, Cafés, Foreign Cookery, &c.*

" 7. The Chemistry and Physiology of Food and Drink. The Detection of Adulteration, Materials used as Adulterants, Analyses, Food Constituents and Equivalents, Tables, Diagrams, &c.

" 8. Diseases due to unwholesome and improper Food. Drawings and Models of Animal and Vegetable Parasites, &c.

" 9. Practical Dietetics. Army and Navy Rations, Prison and Workhouse Diet, Foreign Dietaries, &c.

" 10. Publications and Literature, Models and Diagrams relating to Group 1.

" 11. Apparatus and Processes for Conserving, Storing, Conveying and Distributing Fresh Food of all kinds.

" 12. Machinery and Appliances for the preparation of Articles under Group 1.

---

* *Special Notice.*—As Refreshments come within the scope of this Exhibition, all methods of preparing the same, whether by cookery or otherwise, and the display and sale thereof, will be matters of separate arrangement with those wishing to be represented in this section of the Exhibition.

Group 2.—DRESS.

Class 13. Collections illustrative of the History of Dress, National Costume, &c.

" 14. Waterproof Clothing, India Rubber, Gutta Percha, &c.

" 15. Furs, Skins and Feathers. Dresses for Extreme Climates, &c

" 16. Dress for Sport, Hunting Suits, &c.

" 17. Life Saving Dress. Divers' Dress. Fireproof Dress.

" 17A. The Comparative Value of different Dress Materials for Articles of Clothing.

" 18. Publications and Literature, Patterns, Statistics, Diagrams, Models relating to Group 2.

" 19. Machinery and Appliances for the Preparation of Articles under Group 2.

Group 3.—THE DWELLING-HOUSE.

Class 20. Dwellings, Models and Designs for the same, and Specimens of Buildings erected in the grounds. Fittings and Accessories for Dwelling-houses. Completely-fitted Apartments.

" 21. Water Supply and Purification. — Meters, Filters, Water-Fittings, Cisterns, &c.

" 22. House Drains, their Construction and Ventilation.—Sewer disconnection; Sinks, Traps, Gullies; the Disposal and Utilization of House Refuse.

" 23. Water and Earth Closets, Ash Closets, Commodes, Urinals, Disinfecting Powders and Fluids, Insect Destroyers.

" 24. Grates, Stoves, Kitcheners, Ranges, Boilers, &c., for Domestic Use. Apparatus for Heating and Warming, Smoke Abatement, &c.

" 25. Ventilators, Air Inlets and Outlets, Cubic Space of Rooms, Cowls, Air Straining and Cleansing.

" 26. Lighting Apparatus.—(*a*) Electrical Apparatus for Illumination and Domestic Use, Secondary Batteries, Electroliers, Accumulators, &c.; (*b*) Apparatus for lighting by Gas, Gas Producers, Gas Meters, Gas Fittings, Chandeliers, &c.; (*c*) Oil and other lamps; Mineral Oil, Wax and other Candles, Vegetable and Animal Oils.

" 27. Fire Prevention Apparatus—Extincteurs, Portable Engines, Domestic Fire Escapes, &c.

" 28. Materials for Sanitary House Construction—Roofs, Walls, Damp Courses, Solid Floors, Damp-Proof Wall-Coverings, Cements, &c.

" 29. Materials for Sanitary House Decoration, Non-poisonous Paints and Wall Papers, Floor Coverings, Washable Decoration, &c.

" 30. Objects for Internal Decoration and use in the Dwelling. Fittings and Furniture.

" 31. Baths, Bathing Requisites, Public and Private Wash-houses, Washing Apparatus, Detergents, Appliances for Personal Cleanliness, &c.

" 32. Publications and Literature, Models, Pictures, Diagrams, &c., relating to Group 3.

" 33. Machinery and Appliances relating to Group 3.

Group 3a.—AMBULANCE.

Class 31A. Aid to Sick and Wounded in War. Transport. (*a*) *By Human Agency;* Stretchers, Litters, Dhoolies, Palanquins, Hand-Carts, Stretchers on Wheels, (*b*) *By Animal Traction;* Mule Litters and Chairs, Camel and Elephant Litters, Wheel Carriages. (*c*) *By Mechanical Means;* Railway Ambulances, Ship or Water Carriage. Treatment (with portable appliances and portable drugs). (*a*) On the Field. (*b*) In Hut Hospitals. (*c*) In Tent Hospitals. Naval and Military Hygiene.

„ 31B. Aid to Sick and Injured in Peace. Transport. (*a*) *By Human Agency*; Stretchers, Litters, Dhoolies, Palanquins, Hand-Carts. (*b*) *By Animal Traction*; for Accidents and Injuries, for Infectious Diseases, for Ordinary Sickness. (*c*) *By Mechanical Means*; Railway Carriages for Sick and Invalids, Water Carriage. Treatment (with appliances). (*a*) Hut Hospitals for Infectious Fevers and for Epidemic Diseases. (*b*) Tent Hospitals. (*c*) Hospital Ships. (*d*) Furniture and Fittings for Sick Rooms.

Group 4.—THE SCHOOL.

Class 34. Designs and Models of Improved Buildings for Elementary Schools, Infant Schools and Crèches.

„ 35. Apparatus and Fittings for Warming, Ventilating, and Lighting Schools, School Latrines, Closets, &c.

„ 36. Special School Fittings for Storing and Drying Clothing.

„ 37 School Kitchens and arrangements for School Canteens. Methods of warming Children's Meals, &c.

„ 38. Precaution in Schools for preventing the spread of Infectious Diseases, School Sanatoria, Infirmaries, &c.

„ 39. Special Apparatus for Physical Training in Schools, Gymnasia, Apparatus for Exercise, Drill, &c.

„ 40. Literature, Statistics, Diagrams, &c., relating to Group 4.

Group 5.—THE WORKSHOP.

Class 41. Designs and Models for Improvements in the Arrangements and Construction of Workshops, especially those in which dangerous or unwholesome processes are conducted.

„ 42. Apparatus and Fittings for preventing or minimising the danger to health or life, from carrying on certain trades. Guards, Screens, Fans, Air-jets, Preservative Solutions, Washes, &c.

„ 43. Objects for Personal Use. Mouth-pieces, Spectacles, Dresses, Hoods, &c., for use in certain unhealthy and poisonous trades.

„ 44. Illustrations of Diseases and Deformities caused by unwholesome Trades and Professions. Methods of combating these diseases. Preservative measures, &c.

„ 45. Sanitary Construction and Inspection of Workshops, Factories and Mines. (*a*) New Inventions or improvements for ameliorating the condition of life of those engaged in unhealthy occupations. (*b*) Means of economising Human Labour in various Industrial operations.

„ 46. Literature, Statistics, Diagrams, &c., relating to Group 5.

Group 5a.—METEOROLOGY IN ITS RELATION TO THE STUDY OF PUBLIC HEALTH.

Class 46A. Meteorological Instruments, such as are used in climatological investigations; barometers, aneroids, thermometers, earth thermometers, thermometer stands, hygrometers, anemometers, airmeters, rain gauges, automatic meteorological apparatus, sunshine recorders, evaporation gauges, ozone papers, ozonometers, &c.

" 46B Diagrams, Models, and Apparatus illustrative of (*a*) the climatal conditions prevailing in various parts of the world; (*b*) the relations between health and disease; (*c*) rainfall, percolation, evaporation, and flow from ground, and (*d*) other subjects embraced by the Exhibition.

DIVISION II.—EDUCATION.

Group 6.—EDUCATIONAL WORKS AND APPLIANCES.

Class 47. Crèches and Infant Schools.—(*a*) Apparatus and Fittings for Crèches and Infant Schools; (*b*) Games, Toys and Kindergarten Amusements; (*c*) Models and Appliances for teaching; (*d*) Examples of School Work.

" 48. Primary Schools.—(*a*) Apparatus and Fittings; (*b*) Models and Appliances for teaching; Text-books, Diagrams and Examples; (*c*) Specimens of Work in Elementary Schools.

" 49. Domestic Economy and other Forms of Technical and Industrial Education for Girls.—(*a*) Models and Apparatus for the teaching of Cookery, Housework, Washing and Ironing, Needlework, and Embroidery, Dressmaking, Artificial Flower-making, Painting on Silk, Pottery, &c.; (*b*) Specimens of School Work.

" 50. Handicraft Teaching in Schools for Boys.—(*a*) Apparatus and Fittings for Elementary Trade Teaching in Schools; (*b*) Specimens of School Work.

" 51. Science Teaching.—(*a*) Apparatus and Models for Elementary Science Instruction in Schools; Apparatus for Chemistry, Physics, Mechanics, &c.; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of the School Work in these subjects.

" 52. Art Teaching.—(*a*) Apparatus, Models, and Fittings for Elementary Art Instruction in Schools; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of Art Work, Modelling, &c., in Schools.

" 53. Technical and Apprenticeship Schools.—(*a*) Apparatus and Examples used in Primary and Secondary Schools for teaching Handicrafts; (*b*) Models, Plans, and Designs for the Fitting up of Workshop and Industrial Schools; (*c*) Results of Industrial work done in such Schools.

Class 54. Schools for the Blind and for the Deaf and Dumb.—(*a*) Apparatus and Examples for Teaching; (*b*) Specimens of School Work.

„ 55. Literature, Statistics and Diagrams relating to Group 6 and to the Effects of "Cramming" and Overwork on the Young, &c.

„ 56. Collective Displays of School Work and Appliances. School Museums.

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Monsieur Mullier, Médecin principal.

Monsieur Partoes, Capitaine en premier du génie.

Monsieur C. Van Gael, Chef de bureau au Ministère de l'Intérieur, *Secrétaire.*

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Commission appointed by the Minister of Commerce.

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Monsieur le Dr. PROUST, Membre et Secrétaire de l'Académie de Médecine, Professeur agrégé de la Faculté de Médecine, Médecin des hôpitaux, Inspecteur général-adjoint des services sanitaires, Membre du Comité consultatif d'Hygiène publique de France, Président de la Société de médecine publique et d'Hygiène professionnelle, *Vice-President*.

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Monsieur MARIÉ-DAVY, Directeur de l'Observatoire de Montsouris, Président de la Société française d Hygiène.

Monsieur MARTIN, Ingénieur, Président de la Société des Ingénieurs civils.

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Monsieur PASTEUR, Membre de l'Institut (Académie française et Académie des Sciences), Professeur à l'École normale supérieure, Membre du Comité consultatif d'Hygiène publique de France et du Conseil d'Hygiène publique et de salubrité du département de la Seine.

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Monsieur E. TRÉLAT, Professeur au Conservatoire des arts et métiers, Architecte en chef du département de la Seine, Directeur de l'École Spéciale d'architecture.

Monsieur le Dr. A. J. MARTIN, Secrétaire-général adjoint de la Société de médecine publique et d'Hygiène professionnelle de Paris, *Commissaire-général de la Section française*.

Monsieur le Docteur ACHILLE VINTRAS, Médecin de l'Ambassade de France, Médecin en Chef de l'hôpital Français.

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MEMORANDA

FOR THE GUIDANCE OF EXHIBITORS,

DRAWN UP BY THE SUB-COMMITTEES AND APPROVED BY THE

EXECUTIVE COUNCIL.

SCHOOL AND EDUCATION.

THE classification of these two groups—4, the SCHOOL; and 6, EDUCATIONAL WORKS and APPLIANCES—is given on pages 12, 13.

It will be seen that in Group 4 are comprised all the exhibits relating to school construction, to the improvement of the sanitary condition of school buildings, and to means for promoting the health of the scholars by physical exercises and otherwise.

The classification sufficiently shows the character of the exhibits the Committee would wish to see provided. They would, however, lay special stress on those included in Class 39, and relating to physical education. They would be glad to see included as many models as may be convenient of typical elementary schools, and they would appeal for this purpose to School authorities and Managers in this and other countries, and to architects who have given special attention to school construction, for the loan of such models, as well as of plans and diagrams. The admission of the latter, however, must be to a certain extent limited by considerations of space.

As regards Class 40 of this Group—and the same remark will apply to Class 55 in Group 6—the Committee are anxious that this class should be limited, with a view to preventing the Exhibition being overburdened with literature. Books stowed away in glazed cases, the backs only being visible, as is the usual custom in exhibitions, are of little practical value or interest; and if available for examination a constant watch is necessary.

Group 6—which forms the second division of the Exhibition within the province of this Committee—relates entirely to educational works and appliances, these being restricted to such, in the first instance, as attach to primary schools, and secondly, to scientific, artistic, and technical education in secondary and higher grade schools, it being understood that Class 49 comprises what may be considered as technical education for women. Regarding this Group it will be noted that in every Class where they can come in, examples or specimens of school work are included. In the case of primary and infant schools the Committee would be glad to see this part of the Exhibition strictly limited to what is important or characteristic, and the same remark to a great extent applies to Class 49.

The Committee would wish to arrange for as large a display of maps and diagrams as the wall space available will permit.

Of the specimens of work of a handicraft or technical character, the Committee would be glad to see as full a collection as possible, especially of the higher class of work done in certain foreign schools.

The Committee do not consider it at all necessary that extensive collections of apparatus and fittings for infant and elementary schools in use in this country should be shown, especially when it is remembered that the educational collection of the South Kensington Museum is in the close neighbourhood of the Exhibition.

Among other points, on the importance of which the Committee would lay stress, may be mentioned the artistic decoration of schoolrooms, the exhibition of works of art suitable for use in schools, and the exhibition of objects suitable for school museums, or possibly of a typical school museum

As regards the instruction of the blind and of the deaf and dumb—as in all other departments—the Committee would like the various systems to be fully represented, and it should be understood that no preference would be given to one system above another on account of any individual views which members of the Committee might entertain.

It will be noticed that in Class 55 are included the effects of cramming and overwork on the young. The Committee understand that this subject is mentioned in the classification merely in order that it might be included amongst the subjects for Conferences, and they do not understand that any exhibits intended to illustrate it will be sought for.

As regards collective displays (Class 56), the Committee will endeavour to organise displays of this character, which are likely to have a higher educational value than the exhibition of separate articles.

INTERNATIONAL CONFERENCE ON EDUCATION.

An International Conference on Educational matters will be held during the week commencing August 4.

SUBJECTS FOR DISCUSSION:

1. *Conditions of Healthy Education.*—Under this head may be included—the consideration of the structure, fitting, and equipments of a School; gymnastics, and other physical exercises; the right apportionment of time to different subjects of instruction in schools of various classes; the indirect effect of pictorial or other decoration in improving the taste and cultivating the imagination, and in increasing the scholars' interest in their work.

2. *Infant Training and Teaching.*—*a.* Kindergarten; *b.* Instruction generally. Under this head may be included—the right structure of schools and class rooms for very young children; the apparatus needed for play and for instruction; the exercises, mental or manual, best fitted to awaken the faculties; the distribution of time; pictures, decoration, collections of objects, &c.

3. *Technical Teaching.*—*a.* Science; *b.* Art; *c.* Handicrafts; *d.* Agriculture; *e.* Domestic Economy. Under this head may be included: (*a*) methods of teaching the different branches of physical and of natural science, the equipment of school laboratories, the value of experimental work by pupils, the organisation of evening science classes and of science schools, the connection between the teaching of pure and applied science; (*b*) the teaching of drawing and of colouring as a preparation for designing and decorative work; (*c*) the value of special and general workshop instruction in elementary, higher, and evening schools, the equipment of school workshops; (*d*) the teaching of agricultural science in elementary, in intermediate, and higher schools, in evening science classes, in special colleges, and in the universities, methods of teaching, experimental farms; (*e*) methods of

teaching cookery in schools, *e.g.*, by book-lessons, by demonstrative lectures, and in school kitchens.

4. *Teaching of Music in Schools.*

5. *Museums, Libraries, and other Subsidiary Aids to Instruction in connection with Schools.*—Under this head may be included the means of establishing and managing school libraries; the promotion, with the help of the scholars or otherwise, of museums of art and science, illustrative of the local fauna, flora, industry, history, archæology, &c., &c.; school savings' banks; botanical and other field excursions; visits to picture galleries and museums; voluntary evening classes for singing, recitations, &c.; and generally the means of connecting the influence of the school with home life, and self-improvement.

6. *Training of Teachers.*—Under this head will be considered the right professional preparation for teachers in—*a.* elementary, *b.* intermediate and higher, *c.* special and technical schools. The relative advantages of training in special institutions and in colleges for general education. Normal colleges: their constitution, conditions of admission, programme of studies. Apprenticeship. Model and practising schools. Universities and their relations to the training of teachers. Professorships and lectureships on education. Examination for diplomas and certificates. Legal recognition of such diplomas and certificates. Registration of teachers.

7. *Inspection and Examination of Schools.—a.* By the State. *b.* By the universities *c.* By other public bodies.

8. *Organisation of Elementary Education.*

9. *Organisation of Intermediate and Higher Education.*

10. *Organisation of University Education.*

11. *Systems of Public Instruction in various Countries.*

A complete programme, which will be drawn up by the Sub-Committee appointed (a list of which will be found on page 23), will be published in due course.

LIBRARY AND READING ROOM.

The Executive Council have assigned a large room, in the Royal Albert Hall, to be used as a Library and Reading Room in connection with this Exhibition. Authors, Publishers and others have been invited to send copies of works on subjects embraced in either or both of the two Divisions of the Exhibition—HEALTH and EDUCATION.

The Books received will be classified and catalogued, and made available for the use, in the Library and Reading Room, of the public visiting the Exhibition. A Catalogue will be printed. All Packages containing Books for the Reading Room and Library should be forwarded, carriage paid, to the Secretary of the Library Committee, Royal Albert Hall, W. The Executive Council cannot hold themselves responsible for any loss or damage to Books sent in by Exhibitors, but a reference to the Regulations will show that every precaution has been taken.

LABORATORY.

MODEL LABORATORIES OF PUBLIC HEALTH for the display and demonstration of Methods of Examining Food, Air, Water, Soil, and Constructive Materials of Dwellings, Disinfectants, etc., will be formed. These Laboratories would afford an instructive model for municipalities and sanitary authorities.

Laboratory for Biological Research,

Under the charge of Mr. Watson Cheyne and an Assistant.

The Laboratory will be divided into a large room—the Laboratory proper—and three small ones, two for incubators, etc., and one for cleansing purposes.

The exhibit will include all the instruments, materials, and methods (short of the actual inoculation of animals) employed in the investigation of the bacteria and fungi associated with the zymotic diseases of man, animals, and plants. The methods of testing the power of disinfectants will, within the same limits, be also shown.

In more detail there will be exhibited: the materials and processes employed in preparing sterilised cultivating media—cultivations of various micro-organisms, especially those associated with disease—modes of demonstrating bacteria by staining, etc.—modes of investigating bacteria in air, water, and soil, and of isolating and studying the organisms found—methods for testing the power of chemical agents in destroying bacteria, with illustrations—photographs of the various micro-organisms—micro-photographic apparatus microtomes, microscopes, incubators, purifying chambers, etc.

Demonstrations will be given from time to time, at which several of the matters mentioned above will be illustrated, such as the forms of various micro-organisms—cultivations of some organisms to show their modes of growth—methods of preparing sterilised cultivating materials, and of carrying out a series of pure cultivations—methods of examining air, earth, and water for bacteria.

Hygienic Laboratory,

Under the charge of Professor Corfield.
Assisted by Mr. Charles E. Cassal and Dr. W. Fraser.

In this will be exhibited all the apparatus necessary for the Physical, Chemical, and Microscopical examination of Water, Air, Soils, Foods, Disinfectants, etc., and also for the examination of Sanitary Appliances.

Illustrations of the following will be given:—

Microscopical examination of water sediments; chemical examination of mineral and of organic matters in suspension and solution in water; growth of organisms in gelatine and sugar solutions; testing the value of filters.

Methods for estimation of the carbonic acid in air; including the "household test;" detection of other gaseous impurities; chemical and microscopical examination of the organic matter in air.

Mechanical, chemical, and microscopical examination of soils.

Chemical and microscopical examination of various articles of food and drink; detection of adulteration.

Examination of "disinfectants," wall papers, articles of clothing, etc.

Apparatus for experiments illustrating the movements of air in pipes, etc., and its passage through various materials; methods for testing the soundness of drain pipes and soil pipes; the efficiency of traps and other apparatus; and any other experiments connected with Hygiene.

Physical, Chemical, and Microscopical Demonstrations will be given from time to time.

JURY COMMISSION.

H.R.H. the PRINCE OF WALES, as President of the International Health Exhibition, has delegated to a Commission, selected from among the members of the Executive Council, the duty of making arrangements for the effective carrying out of the work of the International Juries.

This Commission consists of:—Lord Reay (Chairman); Sir James Paget, Bart., F.R.S.; Sir Frederick Abel, C.B., F.R.S., D.C.L.; Sir Philip Cunliffe-Owen, K.C.M.G., C.B., C.I.E., Dr. George Buchanan, F.R.S.; with Mr. H. Trueman Wood (Secretary of the Society of Arts); and Mr. Gilbert R. Redgrave, Assoc. Inst. C.E., Joint Secretaries.

His Royal Highness has expressed his wish that the Exhibitors should themselves aid in the selection of Jurors, and in order to carry this suggestion into effect, the Exhibitors will each of them be requested to enter, on a form provided for the purpose, the names of three gentlemen to be recommended as Jurors.

From the list thus formed the Commission will make a selection. They will endeavour to give full weight to the opinions expressed by Exhibitors: but it must be understood that they will not feel themselves restricted to the list of names suggested, especially as the gentlemen recommended by a majority of the Exhibitors may, in some cases, be unwilling or unable to serve.

PRIZES OFFERED BY THE SOCIETY OF ARTS.

The Council of the Society of Arts announce that they are prepared to award the following prizes in connection with the International Health Exhibition:—

Under the John Stock Trust, a Society's Gold Medal or £20, for the best example of sanitary architectural construction, Classes 20, 28, 29, 30, 32.

Under the Shaw Trust, a Society's Gold Medal or £20, for the most deserving exhibit in Classes 41, 42, 43, and 45 (relating to Industrial Hygiene).

Under the North London Exhibition Trust, a Society's Gold Medal or £20, for the best set of specimens illustrating the handicraft teaching in any school—Classes 49 and 50.

Under the Fothergill Trust, Two Gold Medals (or two sums of £20), one for the best exhibit in Class 27 (Fire Prevention Apparatus), and one for the best exhibit in Class 26 (Lighting Apparatus).

From the Trevelyan Prize Fund, Five Gold Medals (or five sums of £20), for the best exhibit in each of the following Classes—2, 3, 6, 7, and 11 (all comprised within Group 1, "Food").

The "Siemens' Prize," a Society's Gold Medal or £20, for the best application of Gas to Heating and Cooking in Dwellings.

Each prize will be a Gold Medal, or the sum of £20, at the option of the recipient.

The Council propose to ask the juries in each class to recommend for their consideration either two or three exhibits which they might consider deserving a prize. It will be assumed that all the exhibits in the classes specified, which come under the above definitions, are eligible for the awards. It will not be necessary for any special application to be made in respect of these Prizes.

LIST OF SHILLING HANDBOOKS

WHICH WILL BE ON SALE THROUGHOUT THE TERM OF THE EXHIBITION AT THE OFFICIAL BOOKSTALLS.

SUBJECT.	AUTHORS.
Healthy Villages. *Illustrated*	H. W. DYKE-ACLAND, C.B., M.D., F.R.S.
Healthy Nurseries and Bed-Rooms, including the Lying-in-Room	Mrs. GLADSTONE.
Healthy and Unhealthy Houses in Town and Country. *Illustrated*	WILLIAM EASSIE, C.E. Appendix by ROGERS FIELD, C.E.
Healthy Furniture and Decoration. *Illustrated*	ROBERT W. EDIS, F.S.A.
Healthy Schools	CHARLES PAGET, M.R.C.S.
Health in Workshops. *Illustrated*	JAMES B. LAKEMAN.
Manual of Heating, Lighting and Ventilation. *Illustrated*	Captain DOUGLAS GALTON, C.B., F.R.S.
Diet, in relation to Health and Work	A. WYNTER BLYTH, F.C.S.
Principles of Cookery	SEPTIMUS BERDMORE.
Food and Cookery for Infants and Invalids	Miss WOOD. Preface by R. B. CHEADLE, M.D., F.R.C.P.
Alcoholic Drinks	J. L. W. THUDICHUM, M.D., F.R.C.P.
Water and Water Supplies	Professor ATTFIELD, Ph.D., F.R.S.
Salt and other Condiments	JOHN J. MANLEY, M.A.
Legal Obligations in respect to Dwellings of the Poor	HARRY DUFF, M.A., Barrister-at-Law. Preface by ARTHUR COHEN, Q.C., M.P.
"Our Duty;" or Moral Responsibility of the Individual in regard to Health	G. V. POORE, M.D., F.R.C.P.
Public Health Laboratory Work. *Illustrated*	W. WATSON CHEYNE, F.R.C.S.; W. H. CORFIELD, M.A., M.D., F.R.C.P., and CHARLES E. CASSAL, F.I.C., F.C.S.
Physiology of Digestion and the Digestive Organs. *Illustrated*	Professor ARTHUR GAMGEE, F.R.S.
Fermentation	Dr. DUCLAUX. Preface by M. LOUIS PASTEUR, Membre de L'Institut.
Infectious Disease and its Prevention	SHIRLEY F. MURPHY.
Cleansing Streets and Ways in the Metropolis and Large Cities. *Illustrated*	WILLIAM BOOTH SCOTT, M. Inst. C.E.
London Water Supply	Colonel Sir FRANCIS BOLTON, C.E.
Fires and Fire Brigades. *Illustrated*	Captain EYRE M. SHAW, C.B.
Athletics. Part I. *Illustrated*	Rev. E. WARRE, M.A.
Athletics. Part II.	Hon. E. LYTTELTON, M.A.; and GERARD F. COBB, M.A.
Dress in relation to Health and Climate. *Illustrated*	E. W. GODWIN, F.S.A.
Accidental Injuries: their Prevention and First Management. *Illustrated*	JAMES CANTLIE, F.R.C.S.
The Ambulance. *Illustrated*	Surgeon-Major EVATT, M.D., A.M.D.
Schools of Art, their origin, history, work, and influences	JOHN SPARKES.

INTRODUCTION TO THE GENERAL CATALOGUE OF EDUCATIONAL EXHIBITS.

THE present collection of objects does not profess to illustrate so vast and comprehensive a subject as that of education in all its fulness and variety. But the primary purpose of the whole Exhibition being to elucidate the conditions of health, it was considered expedient to attach to the principal display, such objects and educational appliances as had a special relation to healthful school life. Accordingly, while it will be found that many important departments of the whole field of public and private instruction lie necessarily outside the scope of the present Exhibition, special pains have been taken to gather together an interesting and characteristic display of the latest devices for :—

(1.) The improved building, fitting, and sanitary arrangements of schools.

(2.) Apparatus for gymnastic and physical training.

(3.) The Kindergarten and other means of infant discipline, training and instruction.

(4.) Art teaching, the adornment of schools, and the means of cultivating taste.

(5.) Handicraft and industrial education.

Two foreign Governments—those of France and Belgium—have organised elaborate collective Exhibitions, showing the methods and results both of primary and secondary instruction in those countries, and many objects are also exhibited illustrating the newest appliances for instruction in use in Germany, in the United States of America, in Sweden, and in Switzerland. That there is no display on the part of the English Government may be readily accounted for by the fact that the Education Department in this country occupies a position wholly unique, and differing substantially from that filled by the Bureau of Public Instruction in almost every Continental country. The State in England administers a large public fund for national primary education, and in doing so necessarily exercises considerable control over the character and aims of elementary schools. But this control is indirect rather than authoritative. The Government does not establish schools, nor appoint or pay teachers, nor prescribe systems, books, or methods of instruction. In all these matters the initiative is taken by local bodies, either voluntary, or representing various religious communities; or elected by the ratepayers, in the cases in which schools are provided by Boards. It is the function of the Education Department to require that by some means efficient schools are provided, and to distribute out of the funds provided by Parliament, grants in aid of local efforts. The amount of these grants depends on the number in the schools, and on the efficiency of the instruction as tested by annual inspection and examination. The code, issued from time to time under the authority of the Education Department, indicates the conditions on which payments are made. The only

bligatory subjects of instruction are reading, writing and arithmetic, and, for irls, sewing. All other subjects are optional, and the educational character of he school is left to be determined by the several managers, on a due considera- ion of the local circumstances and needs.

Since the English Education Department scrupulously abstains from nforcing particular methods and processes and confines itself to the estimation f results, it has no books, apparatus, or system of instructien to exhibit. There re indeed, as the Report of the Department for the year 1883 shows, 4,273,304 hildren on the Registrars in aided schools in England and Wales, or about 1 in ; of the entire population; but for the illustration of the buildings in which hese children are taught, and the appliances used in teaching them, recourse nust be had to the great voluntary societies, or to the municipal bodies which ıave founded and furnished the schools, and not to the Central Government.

Foremost among the voluntary societies are the National Society for Pro- noting the Education of the Poor in the Principles of the Established Church, vhich was founded in 1811, and the British and Foreign School Society, esta- olished in 1808. During the years which preceded the enactment of the Elementary Education Act in 1870, nearly all the provision for public instruc- tion was made by these two Societies, and they still exercise large influence, both in the maintenance of schools and in the preparation of teachers in train- ing colleges. Besides these the Wesleyan Education Committee and the Catholic Poor School Committee supervise the schools of their respective denominations. There are also societies which have devoted themselves largely to the publica- tion of educational literature. Among these the most important are the vener- able Society for Promoting Christian Knowledge, the Religious Tract Society, the Sunday School Union, and the Church of England Sunday School Institute.

Each of these influential voluntary associations has sent to the Exhibition a collection of its school apparatus, plans and publications, and has in the pre- sent catalogue taken the opportunity to place on record an account of its aims and history, and of the scope and character of its present work. Of the great municipal bodies which have been called into existence by the Act of 1870 for the special purpose of controlling elementary education in their respective towns, the School Boards of London, Birmingham, Sheffield, Edinburgh and Glasgow are most conspicuous for the completeness with which they have sought to exhibit the latest improvements in the fitting and general equipment of Board Schools. The Christian Brothers, a society of devoted Catholic teachers, who in France, Belgium, the United States, and in our own country, have organized and conducted many schools for the poor, also send a very interesting collective display, showing the methods and results of their work.

The increased attention now being devoted to the whole subject of infant training, the enlarged sympathy and interest with which the best modern teachers are studying the methods of Fröbel, and the recognition by the Educa- tion Department, for the first time in Mr Mundella's Code, of the need of training, object lessons, recreation, and varied employments, as results to be kept in view, as well as formal instruction, in awarding the Infant School Grant, have justified the appropriation of a considerable space to the Kinder- garten and to the exhibition of pictures, games, manual exercises, and apparatus

specially adapted for the training of very young children, whether in schools or nurseries. The authorities of the British and Foreign School Society, which in its Training Colleges at Stockwell and Saffron Walden is directing considerable attention to the instruction of young teachers in the methods and principles of the Kindergarten, have devoted special pains to the collection and arrangement of suitable objects with a view to make this part of the Exhibition complete.

Most of the leading firms engaged in the production of school-desks and fittings, or in the publication of maps, diagrams, school-pictures and text-books, have sent examples of their educational appliances; and some illustrations of the modes of teaching domestic economy to girls, and the elements of skilled handicrafts to boys, are included in the collection. From Belgium, Holland, and Germany special illustrations will be found of the mode of instructing scholars in Apprentice and Trade Schools. Two or three members of the Royal Commission on Technical Instruction, who have given their services as members of the Educational Committee of advice and selection, have taken special interest in securing good examples, showing the best methods of scientific and industrial instruction now in use. The Engineering Department of University College sends illustrative exhibits, showing how various departments of Applied Science and Technology are treated in that institution. The School of Art Wood-Carving in connection with the City and Guilds of London Institute also contributes specimens of its methods and its results.

In other special Departments, notably the means of cultivating Art in schools, the mode of instructing deaf mutes by the lip or oral system; and the various devices adopted in the teaching of the Blind, the Exhibition, though not exhaustive, contains a number of objects showing the most recent improvements. The Society for training Teachers of the Deaf on the German system of Heinicke; the Association for the Oral Instruction of the Deaf and Dumb, under the direction of Mr. Van Praagh; the Yorkshire Institution for the Deaf and Dumb; the older Deaf and Dumb Asylum; and the Jews' Deaf and Dumb Home; also the Schools for the blind at York, the Royal Normal College at Norwood, the Amsterdam Institution for the Blind, and the National Institution for Blind Children in Paris will be found among the Exhibitors.

In addition to the collection of such instruments of education as maps, desks, apparatus, and various forms of visible illustration, the Exhibition contains an apartment in which the latest educational literature, especially school books, manuals, books for the use of the teacher, and works on the Art, Science, and History of Education, have been brought together for purposes of reference.

THE CITY AND GUILDS OF LONDON INSTITUTE FOR THE ADVANCEMENT OF TECHNICAL EDUCATION.

It is now some years ago since certain of the Livery Companies of London, recognising the altered conditions of apprenticeship, were moved by the desire to devote a part of the funds which had been bequeathed to them, and which had accumulated in their hands, to the general improvement, by means of technical education, of the industries of the country, or of the special trades with which they severally were associated. To the action of the Clothworkers' Company, the establishment of Weaving and Dyeing Schools in Yorkshire is mainly due, whilst the Goldsmiths' and Plasterers' Companies have offered valuable prizes from year to year for designs in connection with the industries with which they are concerned. The Drapers', the Fishmongers', the Cutlers', the Shipwrights', the Carpenters', the Plumbers', the Turners', the Coachmakers', the Paper-stainers', and other Companies have, by means of occasional lectures, by prizes, by exhibitions, and by other agencies, endeavoured to promote the interests of their several trades. It was, however, generally felt that these isolated efforts of individual Companies, although productive of some good results, were not calculated to exert that beneficial influence on the education of the industrial classes of the country which might follow from their united action; and, accordingly, some time before the question of technical education was as prominently before the public as it now is, a suggestion was thrown out that the Livery Companies of London might do well to combine for the purpose of developing a general scheme of technical instruction, adapted to the requirements of all classes of persons engaged in productive industry. This idea took practical shape in the year 1877, when, at a meeting of the representatives of several of the principal Companies, a Committee was formed for the purpose of preparing a scheme for a national system of Technical Education. The Committee so constituted placed themselves at once in communication with a number of gentlemen distinguished for their scientific ability, as well as for their knowledge of the educational wants and requirements of the industrial classes of this country, and obtained from them a set of valuable reports on the best means of giving effect to their object, and the Committee, having carefully considered the various suggestions which had been made to them, prepared the outlines of a scheme which they submitted to the representatives of the several Livery Companies who had joined the Association. This scheme provided for the foundation in London of a Central Institution for higher Technical Instruction; for the establishment of, or for assistance to, trade schools, for the conduct of examinations in technology, and for the subsidising of other institutions in London or in the provinces having cognate objects.

The most important feature in this scheme was undoubtedly the establishment of a Central Institution which should serve as a training school for teachers, and which should afford technical instruction of a high character,

adapted to the requirements of those preparing to take the management of industrial works.

As early as the year 1876, the Clothworkers' Company had made a grant to the Society of Arts towards the payment of Teachers of Classes in Technology, and in the year 1878, these Technological Examinations were transferred to the Association of Livery Companies, then provisionally constituted as the City and Guilds of London Institute for the Advancement of Technical Education. During the year 1879, negotiations proceeded between the Committee of the Institute and Her Majesty's Commissioners of the Exhibition of 1851, and resulted in the acquisition by the Institute from the Commissioners, at a nominal rental, of the ground in Exhibition Road on which the Central Institution now stands. But the development of other parts of the scheme, to which some of the subscribing companies attached even greater importance, was not suffered to remain in abeyance during the erection and equipment of the Central Institution.

In order that a commencement might be made in the provision of technical instruction for artizans and others, the Committee of the Institute, in the autumn of 1879, engaged the services of Mr. W. E. Ayrton and of Mr. H. E. Armstrong, to give courses of lectures and laboratory instruction in Physics and in Chemistry in their application to different industries. These classes, which were the origin of the Finsbury Technical College, were temporarily carried on in the basement of the Cowper Street Schools, belonging to the Middle Class Schools Corporation. It was soon found that they supplied a distinct want, and that for their fuller development a specially adapted building would be required, and the Committee of the Institute were glad to be able to give greater prominence to this part of their original scheme, by the offer of the Drapers' Company to contribute £10,000 towards the erection of a suitable building, provided the Institute would supply at least an equal amount, and would undertake the maintenance of the school. As soon as it appeared evident that the work undertaken by the associated guilds was likely to develop in more than one direction, and to increase in magnitude and in importance, the Committee of the Institute resolved to appoint an Organizing Director, who should, at the same time, act as Secretary to the Council, and in the spring of the year 1880, Mr. Philip Magnus was elected to this post, and shortly after his appointment the Institute was registered under the Companies' Acts as the City and Guilds of London Institute for the Advancement of Technical Education.

The Institute thus established, consisted of a Board of Governors, nominated by the several contributing companies, the Council, and the Executive Committee being elected therefrom. The Chairmanship of the Council was accepted by the Right Hon. the Earl of Selborne, Lord High Chancellor of England, and that of the Executive Committee by Sir Frederick Bramwell, F.R.S , M.Inst.C.E., while Sir Sydney H. Waterlow, Bart, M.P., who, as a member of the Clothworkers' Company, had been associated with every movement for the promotion of Technical Education, was elected Treasurer. The Committee were equally fortunate in securing the services of Mr. John Watney, Mr. W. P. Sawyer, and Mr. Owen Roberts, as Honorary Secretaries to the Council. As public attention was more

and more attracted to the question of Technical Education, and to its influence in improving the industries of the country, the field of work occupied by the Institute gradually widened, and the number of Guilds contributing thereto steadily increased. In December, 1880, the Lord Chancellor addressed a letter to the Masters of the several Guilds in which he expressed the hope that, in view of the need of technical instruction in this country, the Livery Companies would still further assist the Institute in its good work.

"Those," said he, "who have studied the causes of this successful competition on the part of the foreigner, concur in agreeing that prominent among these causes are the opportunities afforded for obtaining an excellent Technical Education in most parts of the Continent of Europe, and the want in our own country of any sufficient training of a similar kind."

The result of this appeal was a considerable increase in the contributions of several of the City Companies. The Drapers' and Goldsmiths' Companies raised their subscriptions from £2,000 to £4 000 a-year, the Clothworkers Company from £2,000 to £3.000, and many other companies did the same in proportion to their means. The total subscriptions to the Institute advanced from £12,840, in 1880, to £23,075 in 1881. The value of the Institute's operations in promoting Technical Education received about this time an important recognition in the acceptance by H.R.H. the Prince of Wales of the Presidency of the Institute. H.R.H. the Prince of Wales has since shown in various ways his interest in the work of the Institute, and his sympathy with the objects which the City and the Livery Companies of London have combined to promote. In July, 1881, he set the foundation column of the Central Institution. In March, 1882, he presided at the annual meeting of the Governors, and very recently, when it was found that further funds were required for the equipment of the Central Institution, he addressed a letter to the Right Hon. the Lord Mayor and to the Masters of the Livery Companies, which has resulted in a sensible augmentation of the funds of the Institute.

A decided impulse was given to the establishment of Technical Schools in this country by the appointment, in the year 1881, of a Royal Commission, to enquire into the instruction of the industrial classes of certain foreign countries in Technical and other subjects, for the purpose of comparison with that of the corresponding classes of this country, and into the influence of such instruction on manufactures and other industries at home and abroad. The Commission consisted of Mr. Bernard Samuelson, M.P., F.R.S., Chairman, Mr. H. E. Roscoe, D.C.L., F.R.S., Mr. Philip Magnus, the Director and Secretary of the Institute, Mr. John Slagg, M.P., Mr. Swire Smith, Mr. William Woodall, M.P., and Mr. G. R. Redgrave, Secretary.

After spending nearly three years in the conduct of their enquiries, in the course of which they visited more than ninety towns on the Continent and in the United Kingdom, the Commissioners were able to report more favourably than was expected of the existing facilities for technical instruction in this country. They found that evening classes were being held in all important manufacturing centres, under the direction of the Science and Art Department and of the City and Guilds of London Institute, and that these two educational bodies were

affording valuable assistance in the establishment and maintenance of schools in which Science and Art were being taught in their application to the local industries. The Commissioners state that "they are able generally to endorse the several schemes of Technical Instruction now in operation or about to be carried on by the City and Guilds of London Institute"; and they pointedly remark, "No organization like that of the Science and Art Department and of the City and Guilds of London Institute exists in any Continental country, and the absence of such organizations has been lamented by many competent persons with whom we came in contact."

Technological Examinations.—Prominent among the agencies adopted by the City and Guilds of London Institute, for promoting Technical Education in the various manufacturing centres of the Kingdom, is their scheme of Technological Examinations. In connection with these examinations a large number of classes have been instituted, in which practical instruction is given in the application of Science and of Art to different industries. The work done by the students in these classes is inspected and examined by the Institute, and on the results of the annual examinations certificates and prizes are granted, which are beginning to be regarded as diplomas of proficiency, and which frequently enable operatives to obtain better employment and higher remuneration. These evening classes have already become, and are likely in future to become still more, the nuclei of Technical Colleges, mainly supported by the towns in which they are situated, but connected with and affiliated to the City and Guilds of London Institute by means of its superintending influence.

In olden times, at the close of his seven years' apprenticeship, and on his giving satisfactory evidence of his proficiency, the master and wardens of the guild admitted the young apprentice to the freedom of the craft; and the award of the full technological certificate of the Institute, which is given to those only who satisfy the examiners of their theoretical and practical knowledge, and in such cases as admit of it, of their skill in workmanship, may be regarded as the modern equivalent of this ancient practice of the guilds.

According to the Programme of Technological Examinations for 1883-84, examinations are held in the following subjects:—

1. Alkali and Allied Branches.
   - A. Salt manufacture.
   - B. Alkali „
   - C. Soap „
2. Bread-making.
3. Brewing.
4. Distilling—
   - A. Coal Tar distilling.
   - B. Spirit manufacture.
5. Sugar manufacture.
6. Fuel.
7. Oils, Colours, and Varnishes, manufacture of.
8. Oils and Fats, including Candle manufacture.
9. Gas manufacture.
10. Iron and Steel manufacture.
11. Paper manufacture.
12. Pottery and Porcelain manufacture.
13. Glass manufacture.
14. Dyeing—
    - A. Silk.
    - B. Wool.
15. Bleaching, Dyeing, and Printing of Calico or Linen.
16. Tanning Leather.
17. Photography.
18. Electro-Metallurgy.
19. Textile Fabrics, manufacture of—
    - A. Cloth.
    - B. Cotton.
    - C. Linen.
    - D. Silk.
    - E. Jute.

20. Lace manufacture.
21. Weaving and Pattern-designing.
22. Electrical Engineering—
    A. Telegraphy.
    B. Electric Lighting and transmission of power.
    C. Electrical Instrument-making.
23. Metal Plate Work.
24. Plumbers' Work.
25. Silversmiths' „
26. Watch and Clock-making.
27. Tools—
    A. Wood-working.
    B. Metal-working.
28 Mechanical Engineering.
29. Carriage-building.
30. Printing.
31. Ores, Mechanical Preparation of.
32. Mine Surveying.
33. Milling (Flour manufacture).
34. Carpentry and Joinery.

The increase in the number of candidates for these Examinations since they were brought under the direction of the Institute has been very great, as may be seen from the following table :—

Year.	Number of Centres.	Number of subjects of examination.	Number of Candidates.	Number of Candidates who passed.
1879	23	7	202	151
1880	85	24	816	515
1881	115	28	1,563	895
1882	147	37	1,972	1,222
1883	154	37	2,397	1,498

At the Examination held in May last 3628 candidates presented themselves, showing an increase of 1231 on the previous year. Already in Manchester, Oldham, Nottingham, Bradford, Huddersfield, Glasgow, Leeds, Preston, Belfast and elsewhere, Technical Schools have been established, in which practical instruction is given to artizans and others in subjects included in the Institute's Programme; and recently, through the liberality of Mr. Quintin Hogg, the Polytechnic Institution in Regent Street has been converted into a Technical School, in which about 1700 students receive Scientific and Technical Instructions.

Central Institution, Exhibition Road.—This Institution, a portion of which has been lent by the Executive Committee of the City and Guilds of London Institute to the Council of the International Health Exhibition, for the holding therein of an Exhibition of School Appliances, is intended to afford practical, scientific, and artistic instruction, which shall qualify persons to become—

1. Technical teachers.

2. Mechanical, civil and electrical engineers, architects, builders, and decorative artists.

3. Principals, superintendents and managers of chemical and other manufacturing works.

The main purpose of the instruction to be given in this Institution is to point out the application of the different branches of science to various manufacturing industries, and in this respect the teaching will differ from that given

in the Universities and in other institutions, in which science is taught rather for its own sake than with a view to its industrial applications. The instruction to be given in the Central Institution will include chemistry, engineering, mechanics, mathematics, physics, drawing, manufacturing technology, workshop practice, modern languages, and applied art, and Professor W. E. Ayrton, F.R.S., Professor H. E. Armstrong, F.R.S., Ph.D., Professor Henrici, F.R.S., and Professor C. W. Unwin, B.Sc., have already been appointed to superintend the principal departments of instruction.

The plans for this Institution were prepared by Mr. Alfred Waterhouse, A.R.A., under whose direction the building has been erected. The foundation column was set by H.R.H. the Prince of Wales on July 18th, 1881. In the reply of His Royal Highness to the address presented to him on the occasion by the Lord Chancellor, His Royal Highness said :—

"Let me remind you that the realization of this idea was one of the most cherished objects which my lamented father had in view. After the Exhibition of 1851, he recognized the need of technical education in the future, and he foresaw how difficult it would be in London to find space for such museums and colleges as those which now surround the spot on which we stand. It is therefore, to me, a peculiar pleasure that the Commissioners of that Exhibition, of which I am the President, have been able to contribute to your present important undertaking by giving to you the ground upon which the present college is to be erected, with a sufficient reserve of land to ensure its future development."

The erection of this Institution and the provision of the necessary fittings, machinery, and apparatus, will cost not much less than £100,000, nearly the whole of which sum has been provided by the liberality of the City and of the Livery Companies of London. The building is for the most part five stories high. In the basement are physical laboratories and mechanical workshops, three large shops at the back being top lighted. These workshops and the whole of the south wing have been lent to the Exhibition authorities for the display of School Appliances and Apparatus. The entrance hall is in the centre of the building, and leads to the great corridor which stretches from one end of the building to the other. Class-rooms, laboratories, and Studios for the teaching of Physics, Chemistry, Mechanics, Mathematics and Art, occupy the several rooms on these floors. Passing along the corridor on the right hand side of the entrance hall there is found a small lecture-room, and farther on, a large class room, lighted on both sides, for the teaching of graphical statics. In the rear are two lecture-theatres, lighted principally from the sides, each of them capable of accommodating 250 students, and adjoining and communicating with each of these lecture-theatres is a room for the preparation of experiments. On the first floor over the entrance is a large reading room and library, now occupied by the exhibition of the Christian Brothers. The offices for the administration are on this floor towards the north end of the building, terminating in the Council Chamber, on the walls of which are emblazoned the Arms of the Livery Companies of London.

On the second floor a large room intended for an Art Museum occupies the principal position in the centre of the building, with class rooms and studios

on the south side. The rooms in the south wing of the building will be mainly occupied by the Physical Department. They will be specially fitted as laboratories for experiments in thermometry, calorimetry, and pyrometry; in the different methods of warming and ventilating; in the reflexion, refraction, and polarization of light and for the construction of optical instruments. Rooms will be arranged for experiments in current and statical electricity; for testing the power and efficiency of dynamo machines; of electric lamps and motors; for experiments in telegraphy and in methods of ascertaining the resistance and capacity of specimens of submarine cables and of underground wires.

On the north side of the building are the rooms belonging to the chemical department.

On the third floor is a large room, 67 ft. by 55 ft., which is intended for a Technological Museum.

At the northern extremity of the building on this floor is a refreshment room for students, and at the opposite end of the building is a large room in the Chemical Deparment which will be used as a Professor's lavatory. A dark room will be arranged on this floor, and the roof is available for photographic operations, and for chemical operations which need to be conducted out of doors or in the sunshine.

Descending a few steps of the staircase in the north wing, one comes to the general chemical laboratory, for the performance mainly of analytical operations, and intended for the use of first year's students in all departments of the College, and beneath this laboratory are found two other laboratories, in which the larger operations incidental to research and technical chemistry will be carried on. In the space between these laboratories will be placed a gas engine to supply the necessary motive power. The large room at the end of the north wing, on the second floor, will probably be specially fitted with apparatus and instruments for the performance of chemico-physical operations, and for microscopical studies in connection with brewing and other industries. On the same floor is a small class-room and preparation-room: and in the rear, and cut off from the main building, is a room entered by a balcony for operations involving the production of specially objectionable fumes.

The north end of the basement will be occupied by the wood workshop, by a laboratory for experiments in mechanics, and by a shop for the construction of mathematical models. In the rear are three top-lighted sheds, one of which will be used as a drawing office; another, now occupied by machinery exhibits, will be devoted to a mechanics' shop, and the third will be fitted as a mechanical laboratory, and will be furnished with testing machines and other apparatus. Immediately adjoining this laboratory is the boiler room and the engine room, which will supply power for the working of the machines in the mechanics' shop, and will also contain an engine for experimental purposes. To the north of this room, separated by a wall, is a large laboratory to be used for the carrying on of metallurgical operations. The northern wing of the basement belongs to the physical department, and will be utilised for delicate experiments in telegraphy and in the measurement of resistances.

It is expected that the Central Institution will be opened for the reception of students in January next. The fee for the complete course of instruction for

those students wishing to qualify for the diploma, will be £30 per annum; but students will be admitted to special courses on payment of lower fees.

The Clothworkers' scholarship of £60 a year, tenable for two or three years, will be annually competed for.

Arrangements will be made for gratuitous courses of instruction to be given in the summer months to Technical Teachers.

THE CITY AND GUILDS TECHNICAL COLLEGE, FINSBURY.—This college, situated in Tabernacle Row, E.C., has for its objects the education of—

(1.) Persons of either sex who wish to receive a scientific and practical preparatory training for intermediate posts in industrial works.

(2.) Apprentices, journeymen and foremen, who desire to receive supplementary instruction in the art practice and in the theory and principles of science connected with the industry in which they are engaged.

(3.) Pupils from middle class and other schools, who are preparing for the higher scientific and technical courses of instruction of the Central Institution.

This college fulfils the functions of a finishing technical school for those entering industrial life at a comparatively early age; of a supplementary school for those already engaged in the factory or workshop; and of a preparatory school for the Central Institution.

The industries or trades to which the courses of instruction specially apply are:—

1. Mechanical Engineering.
2. Electrical Engineering.
3. Industries involving applications of Chemistry.
4. The Building Trades.
5. Cabinet-making and other Art industries.

The instruction consists of lectures, class-lessons and studio and workshop practice. The college comprises a day school and an evening school. The course of instruction in the day school extends over a period of two years, whilst the evening course for apprentices and journeymen lasts three years.

The foundation stone of this college was laid by the late Prince Leopold, Duke of Albany, on May 10th, 1881. In his reply to the speech delivered on the occasion by the Lord Chancellor, the Prince said: "The object which the Institute has proposed to itself is a truly national and patriotic one. It has proclaimed its determination to enter into a generous rivalry with other countries in those branches of trade and commerce in which, one must needs confess, that our native industries have of late years not taken the position which we, as Englishmen, would wish them to occupy. The old apprenticeship system, whatever its merits may be, and whatever good work it may have done in the past, is not equal to the exigencies of the present age; and we are beginning to realise that a thorough and liberal system of education must be placed within the reach of the British artizan in order to enable him to hold his own against foreign competition. When this is done, I believe, as I have said on former occasions, that we need not fear any rival in the world."

In these appropriate words the late Duke of Albany briefly characterised the kind of instruction which was to be, and has since been, given to a large and increasing number of artizan students in the Finsbury Technical College. Less than two years after the foundation stone was laid the new college in Tabernacle Row was opened. The building was erected by Messrs. Peto Brothers, from designs furnished by the Architect, Mr. E. N. Clifton, under whose direction it was completed. Including the expense of fitting and furnishing the laboratories and workshops, the building has cost over £35,000, towards which sum the Drapers' Company contributed £10,000. The structure is very simple, without ornamentation of any kind. It consists of three stories besides the basement. On the ground floor to the left of the entrance are two rooms belonging to the Physical Department, under the direction of Professor Ayrton, used for delicate measuring experiments in telegraphy, &c. In the rear, looking into the playground of the Cowper Street Schools, is a large room used for brewing and for experiments requiring the use of steam in organic chemistry; and adjoining this room is a physical laboratory, for experiments in heat. A small class room for general purposes, and a workshop for the preparation of physical instruments are on the same floor. The staircase is in the centre of the building and lighted from the top, and is surrounded on all sides by class rooms and laboratories.

On the first floor are two lecture rooms, each capable of accommodating 200 students—one being used mainly for lectures in chemistry, and the other for lectures in physics and mechanics. The physical lecture room communicates with a large and lofty museum of physical apparatus, and adjoining this are two other laboratories. These rooms are arranged for the carrying on of an organised series of experiments in current and in statical electricity. The peculiarity of the method adopted is that each experiment has all the apparatus required for performing it ready in position, together with printed instructions. The students work in groups of three. The instruments needed for each experiment are mounted on a board, which can be taken to the lecture room for use during the lecture. Examples of such arrangements of apparatus are now on view in the Exhibition. Adjoining these rooms is a small apartment fitted up with drawing tables, in which the students plot out curves, and record the results of their experiments on squared paper. The second floor is mainly occupied by the chemical laboratories. The main laboratory has 96 working places, each of which has two drawers and two cupboards, and is available for two students working at different times. Each bench is covered with a hood, at the top of which are openings at intervals connected with the chimney, in which a draft is produced by the waste heat from the boilers, the flues passing down the benches and along the floor. The laboratory is divided by double-glass screens, between which are the arrangements for the supply of sulphuretted hydrogen for the use of students. Plans of the laboratory fittings are exhibited in the corridors of the second floor of the Central Institution. Besides the professors' and assistants' rooms, there is a class room, a balance room, two store rooms, and a laboratory for advanced students on the same floor. The instruction, which is under the direction of Professor Armstrong, and will remain under his charge until the opening of the

Central Institution in January next, is somewhat different from that of most chemical schools, the object in view being to teach the main facts and principles of chemistry, and to lead the students to observe correctly and to reason from experiment rather than to make them highly proficient analysts. Indeed, the teaching of analysis as in ordinary schools is a very unimportant feature in the earlier part of the course.

In the basement of the building is a large room which contains dynamo machines, worked either by the main steam engine or by the gas engine in the same room. The greater part of the building is lighted by incandescent lamps, which are supplied with a current from an Edison dynamo machine in this room. Another room in the basement is fitted up as a Mechanical Laboratory, under the direction of Professor Perry, who at present has charge of the instruction in engineering and in mathematics. The apparatus in this laboratory is nearly all of a novel kind. Among other experiments are those on the energy of a rotating body, the resistance of wire to extension and torsion, and of beams loaded and supported in various ways, and of the vibration of the pendulum, &c. Some of the apparatus used in these experiments, portions of which have been made in the school itself, are now on view in the Central Institution. Adjoining this laboratory are two workshops, one fitted with benches and lathes for wood work, and the other with vices and machine tools. These workshops are in charge of a practical mechanic, and the students are able to construct models and machines for their own use and for the use of the college. There is also an engine room containing a boiler and steam engine, which are provided with appliances for measuring evaporation, steam temperatures, steam pressure, &c. On the other side of the playground, in rooms temporarily rented from the Cowper Street schools, are the studios of applied Art, under the direction of Mr. Brophy. These classes are attended mostly by evening students, and the instruction is made to bear as much as possible upon the industries in which the student is engaged. Two or three rooms in this department are devoted to the teaching of drawing, painting, and modelling from life, and special attention is given to designing for the particular trade in which the student is engaged. Examples of the students' work may be seen in the Exhibition.

Nearly all the day students attend the college from 9.30 a.m. till 5 p.m., and follow the complete course of instruction as laid down in the programme, comprising mathematics, mechanics, physics, chemistry, machine drawing, freehand drawing, workshop practice, and French or German. Before being admitted they are required to pass an examination in elementary mathematics. The fee for the season is £9, and there are several exhibitions available for pupils of the middle class schools of the metropolis, and tenable at the college. Evening classes are held in electrical technology, in mechanical engineering, in the applications of chemistry to various industries, in metal plate work, in plumbers' work, in carpentry and joinery, and in bricklaying, in addition to the classes, in applied art, which are specially adapted to the requirements of cabinet makers, lithographers, masons, decorators, and designers of all kinds. Illustrations of the methods of teaching adopted in these trade classes form part of the exhibits of the Finsbury Technical College. The fees for the evening classes vary from 6s. to 30s. for the session of eight months. In his introductory

address at the opening of the college, on the evening of February 19, 1883, Mr. Philip Magnus, speaking of the general character of the education to be given in the college, said:—

"The separate curricula comprise instruction in subjects having a direct bearing on the industry which the student proposes to follow. Whilst the utilitarian side of education has been kept steadily in view, no subject having been included in these curricula, a knowledge, and an ever-increasing knowledge of which the student will not find it desirable to possess, the methods of instruction adopted are such as will, at the same time, stimulate and develop the reasoning faculties of the pupil. The instruction will be technical in so far as it refers to the career of the student; but it must not be supposed, that because it is in this sense technical, and consequently strictly useful, it is therefore less disciplinary. One of the yet unsolved problems of education is to discover subjects of instruction which a school-boy, in after life, shall not cast aside as unprofitable, either for the purposes of his daily work or recreation, and the teaching of which shall have the same disciplinary effect as that of other subjects, which for so many centuries have been the sole instruments of education. In this college, an attempt will be made to partially solve this problem, by teaching science with this double object."

The attendance at the college since it was first opened has shown how great is the demand for technical instruction of this kind. During the past session over 100 students have attended the regular day courses, and over 600 students, many of whom are apprentices, who are admitted at half the ordinary fees, have attended the evening classes.

City and Guilds of London Technical Art School, Kennington Park Road.—This school is carried on in two dwelling houses, and in two top-lighted class rooms, which have been built in their rear. The instruction comprises drawing, painting, and modelling from life, lectures on the art of designing and wood engraving. In the wood engraving class, the students work at circular tables, each of which has an elevated block in the centre for the lamp and glass water lenses. The students are required before entrance to have taken the second grade certificate of the Science and Art Department. One evening in each week is set apart for drawing on wood. In the elementary design class the instruction includes of flowers, foliage, natural forms, and the arrangement of these studies in simple designs. In the advanced class lectures are given on the principles of designing and on style. The school is already overcrowded, and funds are greatly needed for its extension. The occupations of the students who have attended the school during the past year have been as follows:—

Designers	35	Modellers	12
Wood Engravers	17	Clerks	6
Stone Carvers	24	Art Students	8
Teachers	14	Draughtsmen	6
China Painters	12	Lithographers	2
Wood Carvers	4	Cabinet Makers	2

Several of the students attending these classes are engaged during the daytime in the Lambeth Potteries; and there can be little doubt of the influence

which this school has exerted in assisting in the development of the important industry carried on by Messrs. Doulton.

Besides having established these important schools in the metropolis, the City and Guilds of London Institute has rendered efficient aid to the advancement of Technical Education by means of the grants which it has made to other Institutions. The new Technical School at Manchester owes its existence partly to the timely assistance afforded by the City Guilds. In this school as many as thirteen Technical Classes have been carried on during the past year in connection with the Institute, the number of students in attendance being 261. At Nottingham, a Technical Department has recently been added to the University College, to the establishment of which the Institute has contributed; and a Technical School is now being erected in Leicester, which has likewise received some assistance from the London Guilds. A department for the practical teaching of Engineering and of Metallurgy is about to be added to the Firth College, Sheffield, to which the Institute has conditionally promised to help in supporting. The Horological Institute, Clerkenwell, in which classes are held for practical instruction in watchmaking, and the School of Art Wood Carving in the Albert Hall, have also received aid from the City and Guilds of London Institute. Since its inception thirty-three of the Livery Companies of London have contributed by subscriptions or donations towards its expenses. The contributions to the Building Fund have already amounted to £56,902, and the annual subscriptions of the year 1883 amounted to £23,470. These amounts, large as they may seem, are small considered in connection with the work undertaken by the Institute; and when it is remembered that Institutions like the Polytechnic of Zurich, and the Technical High School of Munich, of Berlin, and of other places, are maintained at an annual expense of from £15,000 to £20,000 the cost of erection of each school varying from £100,000 to £450,000, it will be seen how greatly the Institute is in need of funds, in order that it may creditably accomplish the work it has undertaken, and enable the people of this country, both artizans and employers, to receive at home as complete a Technical Education as may be obtained in many parts of the United States, and in nearly all the large cities of the Continent.

GROUP IV.—THE SCHOOL.

Class XXXIV.

(*East Central Gallery A.*)

Designs and Models of Improved Buildings for Elementary Schools, Infant Schools and Crèches.

1270. **BROCK, E. P. LOFTUS, F.S.A., Architect, 19 Montague Place, Russell Square, W.C.**—(1) Plan of the Shaftesbury Home for Boys, Bisley, Surrey, for the National Refuges Society for Homeless and Destitute Children, showing the arrangements of the building in regard to its healthy use. (2) Plans of the German Orphanage, Dalston, for Baron Schröder, showing the arrangements of the building in regard to its healthy use.

1271. **CHAMBERS, P. CAMDEN, Lowestoft.**—Plans and Designs of Improved Buildings for Elementary Schools.

1272. **HENMAN & HARRISON, 64 Cannon Street, E.C.**—Drawings, being plans and views of various public elementary and public middle-class schools erected from our designs during the last ten years.

1273. **NORTH, C. N. McINTYRE, 15 Boro', High Street, S.E.**—(1) Design for reconstruction of St. Saviour's Grammar School, Southwark. (2) Design for Boys', Girls', and Infants' Schools to be erected on a restricted site in a town.

1274. **THE MAYOR AND ALDERMEN OF LEIDEN, HOLLAND.**—(1) Three designs of building of Elementary School for 372 pupils. (2) Six designs of building for the High Burghal School for Young Ladies for 150 pupils. (3) Designs of School Furniture. (4) Six designs of building for a Gymnasium for 150 pupils.

1276. **SIEBREICH, CHARLES, 4 Mozartgasse, Vienna, Austria.**—(1) Designs and Photographs of School Buildings. (2) Technics of Public Health and of Safety of Life.

1277. **CHIAVE, D., Municipio di Torino, Italy.**—Album with designs of several of the principal school buildings which are now being finished in Turin.

HUMPHREYS, J. C., Albert Gate, Knightsbridge, Hyde Park, S.W. (*See Outside.*)

Class XXXV.

(*East Central Gallery A.*)

Apparatus and Fittings for Warming, Ventilating, and Lighting Schools, School Latrines, Closets, &c.

1279. **RECK, A. B., 3 Thuresensgade, Copenhagen.**—(1) Heat and Ventilating Stoves and Hot Air Furnaces for schools, infirmaries, churches, offices, and private dwelling-houses, &c. (2) Publications and Drawings of schools, infirmaries, churches, offices, and private dwellings, &c.

1280. **LONDON WARMING AND VENTILATING CO. (THE), 32 Henrietta Street, Covent Garden, W.C.**—Gurney Stoves, and Woodcock's Improved Gurney Stove.

1281. **WEEKS, J., & CO., Warming and Ventilating Engineers, King's Road, Chelsea.**—(1) Weeks's Patent Upright Tubular Boilers, various, including their Patent Duplex, with hollow furnace bars for utilizing the heat of furnace and transferring it to the water before entering the boiler. (2) Weeks's Tubular Waterbar Open Fire Grate, specially constructed for applying to ordinary register stove fronts. For warming nurseries and school-rooms, first, as an open fire; second, by means of pipes round the room, and also for giving a constant supply of hot water for washing and other purposes. (3) Weeks's Hydro-Caloric Vertical Tubular Coil, for warming and ventilating in one operation. For warming the air of the room, for admitting a constant current of fresh warm air, for disinfecting and charging the air with a healthful degree of humidity. (4) Weeks's Horizontal Hot Water Coil.

1282. **HERRING & SON.**—Model of the Warming and Ventilating Apparatus of the City of London School, Victoria Embankment. Also extra strong and cheap Fire Brick Stoves, with tile fronts for smoke-abatement and easy removal of wearing parts.

ADAMS, ROBERT, 7 Great Dover Street, and 17 Blackman Street, Boro', S.E. (*See Class* 20.)

BACON, J. L., & CO., 34 Upper Gloucester Place, Dorset Square, N.W. (*See Machinery in Motion, Western Gallery.*)

BOWES, SCOTT, & READ, Broadway Chambers, Westminster. (*See Class* 23.)

DEARDS, W. & S., Harlow, Essex. (*See Class* 24.)

DOMESTIC ENGINEERING & SANITARY APPLIANCES CO., 24 High Holborn, W.C. (*See Class* 23.)

FARNWORTH, J. K., 24 St. James' Square, Bath. (*See Class* 24.)

GENERAL GAS HEATING AND LIGHTING APPARATUS CO., Limited (THE), 54–70 St. Paul's Street, New North Road, N. (*See Class* 24.)

HAND, HENRY AUGUSTUS, 118 Camden House Road, Kensington. (*See Machinery in Motion, Western Gallery.*)

HOWORTH, JAMES, Ventilating Engineer, Victoria Works, Farnworth, near Bolton. (*See Machinery in Motion, Western Gallery.*)

JENNINGS, GEORGE, Palace Wharf, Stangate, S.E. (*See Class* 31.)

KEITH, J., Engineer, 57 Holborn Viaduct, E.C.; Edinburgh and Arbroath. (*See Class* 24.)

LAMB, J. M., & CO., 119 Finchley Road, South Hampstead, N.W. (*See Class* 25.)

ROSSER & RUSSELL, 22 Charing Cross, S.W. (*See Class* 24.)

STIRRAT, B. B., 43 Alexander Place, Newcastle-on-Tyne. (*See Machinery in Motion, Western Gallery.*)

WALLER, THOMAS, 43 Fish Street Hill, E.C. (*See Class* 24.)

WILCOCK & CO., Burmantofts, Leeds. (*See Class* 23.)

Class XXXVI.

(*East Central Gallery A.*)

Special School Fittings for Storing and Drying Clothing.

1285. **MAC CARTHY, Rev. E. F. M., M.A., King Edward's School, Five Ways, Birmingham.**—Model of a School Cloak Room (adapted, with improvements, from the best examples to be found in American Public and Normal Schools), showing Drying Apparatus, Drainage for Umbrellas, &c., now in use in King Edward's Grammar School, Five Ways, Birmingham. (*See page* 70.)

CLEMENTS, JEAKES, & CO., 51 Great Russell Street, W.C. (*See Class* 24.)

Class XXXVII.

(*East Central Gallery A.*)

School Kitchens and arrangements for School Canteens. Methods of Warming Children's Meals, &c.

CLEMENTS, JEAKES, & CO., 51 Great Russell Street, W.C. (*See Class* 24.)

GENERAL GAS HEATING AND LIGHTING APPARATUS CO., Limited (THE), 54–70 St. Paul's Street, New North Road, N. (*See Class* 24.)

LOCH BROS. & CO., 35 Queen Victoria Street, E.C. (*See Machinery in Motion, Western Gallery.*)

NEWTON, CHAMBERS, & CO., Limited, 19 Great George Street, Westminster, S.W. (*See Class* 24.)

Class XXXVIII.

(East Central Gallery A.)

Precaution in Schools for preventing the spread of Infectious Diseases, School Sanitoria, Infirmaries, &c.

1287. **PAGET, CHARLES E., Kendal, Westmoreland.**—Model, &c. Made of wood, and arranged to show the special details of construction which are desirable in all buildings erected for the reception and isolation of infectious sickness.

1288. **WHITE, WILLIAM, F.S.A., 30a Wimpole Street, W.**—Winchester College Sanatorium. Illustrations of "Isolation Block," and general plan.

BRADFORD, T. & CO., 140-143, High Holborn, W.C. *(See Machinery in Motion, Western Gallery.)*

TURNER, GEORGE, & CO., 181 Choumert Road, London, S.E.—School Santioria. *(See Class* 31 A & B.)

Class XXXIX.

(East Central Gallery A.)

Special Apparatus for Physical Training in Schools, Gymnasia, Apparatus for Exercise, Drill, &c.

1290. **AYLING, EDWARD, Auckland Street, Vauxhall.**—Rowing, applicable to Physical Training at Universities, Schools, &c., illustrated by Oars, Sculls, Paddles, and other objects of interest connected with Rowing: such as the Oars used in the Inter-University (Oxford and Cambridge) Boat race, 1884; the Sculls used by Edward Hanlan in his match against Elias C. Laycock; also used by Jefferson Lowndes, Esq., in the Diamond Sculls, at Henley, and the Amateur Championship on the Thames, Season 1883. Sculls manufactured expressly for the Davis Swivel Rowlock. A Racing Scull of a century ago, &c.

1291. **LILLYWHITE, JAMES, FROWD & CO., 4 & 6 Newington Causeway, S.E.**—(1) Cricket Bats, Balls, Stumps, Leg-guards, Gloves, and other Appliances for the Game. (2) Lawn Tennis Bats, Balls, Nets, Poles, &c. (3) Indian Clubs, Dumb-bells, Quoits, Foils, Masks, Footballs, Boxing Gloves, &c.

1292. **SCHWENCKE, C., Kissingen Villa, Mostyn Road, Lower Merton, Surrey.**—Patent Apparatus for the Technics of the fingers.

1293. **COST, H., Baker Street, Portman Square, W.**—(1) H. Cost's Patent Calisthenic Chest Expanders. (To be used in graceful exercises for the healthful and symmetrical development of the human form.) (2) Cost's Wall Springs, and Photographs of Cost's Exercising Plane. (The two last-named instruments are more especially for the healthful development of the muscular system and correction of irregularities of the figure, spinal curvature, &c.)

1294. **HORN, T. S., Elgin Road, Croydon.**—Patent Improved Regulating Digitorium, a mechanical instrument for exercising the fingers.

1695. **HOWARD, PROFESSOR, 100 Wardour Street, W.**—Health-producing Games:—Cricket, Football, Lawn Tennis, Indian Clubs, Horizontal Bars, School Gymnasia, Boxes of Games suitable for Children.

1296. **ROTH, DR., 48 Wimpole Street, Cavendish Square, W.**—(1) A Large Table of Elementary Positions and Exercises according to Ling's System for the development of the various parts of the body. (2) Models and Patterns of hygienic dress, shoes and boots, stays, stockings, &c. (3) Model showing three different School Ventilators. (4) Drawing of a Russian Bath, including the application of steam, cold and warm water in various forms. (5) Diagrams of bad positions during the time of Education causing lateral curvature and other complaints. (6) Diagrams of bad positions while writing. (7) Models of hygienic school benches and chairs, permitting the student to lean comfortably during his occupations in school. (The full-size chairs made according to Dr. Roth's instructions are exhibited by the North of England School Furnishing Co. in the Albert Hall.) (8) Means for the Physical Education of the senses.

1297. **HOLM, JOHN, F.R.C.S. (Edin.), 48 Conduit Street, W.**—(1) Model of Gymnasium for carrying out Ling's System of Swedish Gymnastics (Educational Section). (2) Diagrams illustrating the Exercises. (3) Literature in reference to the same.

1298. **BACON, GEORGE W., F.R.G.S., 127 Strand, W.C.**—(1) Bacon's Patent Portable Gymnasium. for home and school use. (2) Bacon's Patent Trapeze and Horizontal Bar. (3) Bacon's Patent Chest Expander. (4) Bacon's Patent Child's Swing, pertaining to above gymnasium.

1299. **PIGGOTT BROTHERS, 59 Bishopsgate Street Within, E.C.**—(1) The Combination Gymnasium, consisting of 2 spaned planks, climbing ladder, plain plank, climbing rope and pole, trapeze bar, and lady's swing: is adapted for either indoor or outdoor use. (2) Portable Horizontal Bar, for house or garden, with iron core. (3) Nursery Gymnasium, comprising horizontal bar, trapeze bar, hand rings and swing for children, and horizontal bar for adults. (4) Parallel Bars, portable, for military gymnasium or schools. (5) Jumping Stand. (6) Case of Fencing and Boxing Requisites.

1300. **HARVIE, J., Stopford House, Rozel Road, Clapham, S.W.**—Improved Double Bar Swing.

1301. **SPENCER, GEORGE, 52 Goswell Road, London.**—Combination Gymnastic Apparatus; Portable Steel Core Bar,—ditto, 30s., Iron Core; Parallel Bar, two sizes. Lawn Gymnasium, Chest Machine, Giant Strides, Nursery Gymnasium, Jumping Stands, Climbing Ropes, Poles, India Clubs, Calisthenic Apparatus, and every description of School or Private Gymnasia and Fencing Requisites.

1302. **GARCET & NISIUS, 76 Rue de Rennes, Paris.**—Special Apparatus for gymnasium and Military Exercises.

1303. **GOY, H., 21 & 22 Leadenhall Street, E.C.**—Gymnastic Apparatus. Specimens of Latest Improvements in Apparatus for the Room or the Open Air, both portable and fixed.

1304. **STEMPEL, ADOLF A., Master of Gymnastics, Fencing, Calisthenics & Drilling, Importer of Gymnastic Apparatus. (Herr STEMPEL'S Gymnasium & School of Arms, Gymnastic Apparatus Depot, 75 Albany Street, Regent's Park, N.W.)**—Portable Gymnasium Apparatus, on the German moveable system.

1305. **ZANDER MEDICO-GYMNASTIC CO., Limited, 7 Soho Square, W.**—(1) Chest-Expanding Machine. (2) Machine for exercising the legs; suitable for elderly persons. (3) Machine for exercising the muscles of the ankle. (4) Machine for strengthening the back and correcting stooping in children. (5) Machine for exercising the muscles of the back and chest.

1306. **NORDENFELT, T., 53 Parliament Street, S.W.**—School Gymnasium, on the Swedish (Ling's) System; manufactured by Mr. Ekstrand in Stockholm.

1307. **KNOFE, OSCAR, 16 Finsbury Park Villas, Green Lanes, London. N.**—All kinds of Gymnastic Apparatus and Fencing Requisites for Schools, Private, Public, and Military Gymnasia, including Horizontal Bars, Parallel Bars, Vaulting Horses. Vaulting Bucks, Vaulting Tables, Jumping Apparatus, Climbing Scaffolds; Family, Parlour, and Lawn Gymnasia, Swings, &c., for children and adults. All kinds of Requisites for outdoor and indoor games, such as Lawn Tennis, Cricket, Football, Croquet, &c.

1308. **CHAMBERS, W. OLDHAM, F.R.I.B.A., Lowestoft.**—Plans and Designs for Swimming Schools, showing improved system for teaching the art of swimming.

1309. **SLAZENGER & SONS, 56 Cannon Street, E.C.**—Cricket Bats, Lawn Tennis Rackets.

Class XL.

(*East Central Gallery A.*)

Literature, Statistics, Diagrams, &c., relating to Group 4.

ETZENBERGER, R., Midland Grand Hotel, St. Pancras. (*See Outside.*)

ROTH, DR. M., 48 Wimpole Street, Cavendish Square, W. (*See Class* 39.)

SCHMIDT, KARL AUGUST, 2 Konstantinow'sche Militair-Schule, St. Petersburg.—Books and Diagrams illustrating correct positions in walking, standing, or sitting. (*See Library.*)

WHITE, WILLIAM, F.S.A., 30a Wimpole Street, W.—Æsthetical Sanitation, showing the Influence of the Healthy Culture of the Body on Beauty and Art. (*See Library.*)

DIVISION II.—EDUCATION.

GROUP VI.—EDUCATIONAL WORKS AND APPLIANCES.

Class XLVII.

(Royal Albert Hall.)

Crèches and Infant Schools.—(*a*) Apparatus and Fittings for Crèches and Infant Schools; (*b*) Games, Toys, and Kindergarten Amusements; (*c*) Models and Appliances for teaching; (*d*) Examples of School Work.

1370. **NEWMAN, O., & CO., Kindergarten and Educational Warehousemen, 40 Cheapside, E.C.; 7 Trafalgar Buildings, Charing Cross, W.C.; and at Berlin.**—Collections of Kindergarten materials and appliances for primary instruction, according to Froebel's System, adapted for school and home use, showing the materials in various degrees of development adapted to the various branches of primary instruction. Specimens of sewing work done on outlined cards, which, after having been pricked with a needle, are worked out with wool. House, made by the Sticklaying Occupation, giving an idea what pretty patterns may be produced even with such simple materials as little wooden sticks. Also a pea-work model of a church, and two sets of models put together according to diagrams. Specimens of weaving mats and a new patented improved steel weaving needle. White Composition Stone Slates. A new method of teaching the multiplication table. The manufacture of paper and silk is illustrated by specimens of the various raw materials, and the changes these have to undergo before becoming an article of commerce. Series of Animals one-seventh natural size, for object lessons in Elementary and Kindergarten Schools. (See also No. 1453, Apparatus for Science Teaching.)

1371. **DRUKKER, MORRIS, 61 Stamford Road, Kingsland, N.**—(1) Games of various kinds. (2) Toys (educational and otherwise). (3) Kindergarten amusements. (4) Building Bricks, &c., &c.

1372. **FARMER, M., Albert Works, 34 & 36 Britten Street, Chelsea, S.W.**—Kindergarten Educational Printing Apparatus.

1373. **MILLER, S. A., Orange House, College Park, Lewisham, S.E.**—(1) Reading and Writing, a series of cards. (2) Script Copies; Slates and Paper to match. (3) Letters and Words, sorted; in boxes, with key. (4) Select Rhymes, for Reading and Recitation. (5) First Sums, on Cards. (6) Bead Strings, varied. (7) Infants' Musical Staff and Notation, with Songs. (8) Children's Work.

Existent pressure, along with the many queries as to modes of education, would seem to indicate that we may not as yet have found the right method to work with children. We are beginning to discover some facts about them; in particular, that the "restlessness" hitherto regarded as a main hindrance is, in fact, a helpful force, and we are doing something to provide scope for its exercise.

Yet much is lacking. What is it? Scope for activity, even if provided (and we are only on the way to this), is not the only thing required. Unless properly trained to such work as we give them, our children become careless as to its quality, and, in the same proportion, indifferent to their task—not found interesting. They have to be reminded that "strictness is the condition of rejoicing," and to be helped to realise the fact. And how? Outward checks are of course needful, but the higher and truer work is to evoke the critical faculty latent in each child, and set it to work upon himself. Children's knowledge is always in advance of their practice. Eye and ear can criticise defects of hand and voice, and should be set to do such work as they could, instead of leaving it to a teacher. A habit of self-criticism once induced, we should clearly be far on the way to real moral culture, now theorised about, rather than practically secured. A further step would be gained in the recognition of children's sociable proclivities by setting them both to help and criticise each other. Training would be needed here also, and specially; but returns would so certainly prove fruitful in good, that all time and effort devoted to the object would be found wisely expended.

The initiation of such work calls for special consideration. It may well claim time for itself, seeing that, in the nature of things, it would be needed but once. Restricted aims and clear direction (within such narrow limit) would be found essential conditions of success; but, these secured, much might be accomplished in a short time, far more than would appear likely, inasmuch as, if working wisely, we carry the children with us.

1374. **VEREIN FÜR VOLKERZIEHUNG UND VOLKSKINDERGARTEN, Potsdamerstrasse, Berlin (DR. EDMUND FRIEDEMANN).**—Collection of Appliances, &c., illustrative of the Froebel Pestalozzian System of Kindergarten Teaching.

1375. **CREMER, W. H., 210 Regent Street, W.**—(1) Games and Recreations of an amusing and intellectual character. (2) Out-door Sports and Pastimes conducive to health. (3) Educational Toys and Kindergarten Appliance in all its branches. (4) Building Bricks of Wood and Stone, Mosaic. (5) Alphabets and Spelling Games. (6) Dissected Maps. (7) Scriptural and Secular Subjects. (8) Boxes of Tools. (9) Printing Presses with moveable types. (10) Colour Boxes and Exercises. (11) Special Top for infants and the nursery. (12) New Patent Soft-stuffed Animals. (13) Model Rag Dolls and Toys of white wood. (14) Practical Miniature Cooking Stoves. (15) Model Dolls' Houses. (16) Appropriately Furnished Shops of various kinds, with weights, scales, &c.

1376. **GUTHRIE, PROF. F.**—Collection of objects to illustrate the Exhibitor's 'First Book of Knowledge.'

1378. **J. RAMSAY COOPER, 17 High Street, Canterbury.**—Boards with revolving or sliding arrangements and reading sheets, for teaching children the English language by a graded method of phonic word-building with the ordinary orthography. 1st step.—The vowels used in their primary powers. 2nd step.—The vowels used in their primary powers, preceded by a consonant. 3rd step.—The vowels in their primary powers, preceded and followed by single consonants, with *silent* final "e" as in "lake," "ride," "home," &c. 4th step.—Vowel-digraphs in which the first vowel is vocal and the second silent as in "pain," "boat," "seat." 5th step.—Vowels and vowel-digraphs as above, with double consonants. 6th step.—Vowels used in their secondary (or short) powers, as in "man," "ten," "pin," "log," "run." 7th step.—Vowels and diphthongs represented by irregular orthography. 8th step.—Consonant variations. 9th step.—Special exceptions.

1379. **MAGNUS, DR. HUGO & JEFFRIES, DR. B. JOY.**—Colour Chart for the Primary Education of the Colour-sense, published by L. Prang & Co., Boston, U.S.

EDWARDS, H. & G., 84 High Street, Camden Town, N.W. (*See Class* 48.)

HAMMER, GEORGE M., 370 Strand, W.C. (*See Class* 48.)

MIDLAND EDUCATIONAL CO. (THE) (Manager, A. TAYLOR), 91-92 New Street, Birmingham. (*See Class* 48.)

MYERS, A. N., 15 Berners Street, Oxford Street, W. (*See Class* 48.)

NORTH OF ENGLAND SCHOOL FURNISHING CO., Limited, Darlington, Durham. (*See Class* 48.)

Class XLVIII.

(*Royal Albert Hall.*)

Primary Schools. (*a*) Apparatus and Fittings: (*b*) Models and Appliances for teaching: Text-books, Diagrams and Examples: (*c*) Specimens of Work in Elementary Schools.

1380. **MIDLAND EDUCATIONAL COMPANY (THE) (Manager, A. TAYLOR), 91 & 92 New Street, Birmingham: and 7 Market Street, Leicester.**—(1) The Reliance Desk. (2) The Paragon Desk. (3) The Birmingham Dual and Single Desk. (4) The Midland Dual and Single Desk. (5) Varieties of Mistresses' Work Tables. (6) Apparatus and Fittings for Infant Schools. (7) School-work Tables.

1381. **TAYLOR & CO., Driffield, Yorkshire; & 62 St. Martins-le-Grand, London.**—(1) The Yorkshire School Board Desk, a long fixed locker desk, with a separate hollowed seat and back for each scholar. Adopted in a number of large board schools. (2) Dual Desk, with broad turn-up flap and extra strong joints, as used in board schools in London and elsewhere. (3) The "Yorkshire" Convertible Desk, forming at pleasure desk, table, or backed seat. (4) The "Yorkshire" Master's Table, containing two cupboards, two drawers, and lock-up slope. (5) Improved "Swedish Pattern" Single Desk, with seat to fall back. (6) Single Desk, on Gothic pattern, iron standards. (7) Bookcase for class-rooms in colleges, &c., having shelves for books and divisions for folios or slates. (8) Cheap Portable Mahogany Bookcase for teachers, private rooms, &c. (9) Seats for lecture halls and schools; fixed and reversible backs. (10) Improved Hat and Coat Hooks, made from steel wire, &c., &c.

1382. **ST. JOHN'S INSTITUTE FOR DEAF AND DUMB, Boston Spa, Tadcaster, Yorkshire.**—(1) A Self-fastening Reversible School-desk. The desk top is held in position by a small latch which falls into notches on the inner side of a semicircular piece of

iron attached to the desk. The advantages claimed for this desk by the exhibitors are:—1. Simplicity of construction. 2. It is self-fastening, and hence, 3. There is no danger of the desk overturning in class, from it not having been properly fastened, or having been loosened by children. 4. There are no pins, keys, screws, or springs, to get lost or worn out. (2) An Infant Gallery, consisting of steps, seats, and back to seats, screwed on to iron standards. The advantages claimed for this gallery are, 1. It is inexpensive, for it is sent out so that it can be fitted up in a few hours, thus saving expense of skilled labour. 2. It consists of steps and seat in one, so saving expense of obtaining gallery seats. 3. It is compact and looks well. The seats, backs and risers of steps are made in varnished pitch-pine. (3) A School-chapel Desk, or desk for use in schools and also at times for divine service. There are several hundreds of these school-chapels in the country recognised by the Education Department. This desk is the same as the Reversible Desk, with the addition of a hinged kneeling-board, rendering it useful also as a Church seat or kneeling desk. (4) A cheap form of Box Desk. All the woodwork of this desk consists of boards screwed on to the iron standards, thus dispensing with the joiner's labour. (5) A Hat and Cloak Rail. This may be moved into the middle of the room at the beginning and end of school. The children, passing on each side, hang their hats or cloaks on their own nails as they pass. By this means the ten minutes usually spent in giving out clothes is saved. It may also be moved before the fire to dry the children's clothes when necessary. There is likewise exhibited here, a Dresser for use in School-chapels; a Demonstration Frame, as recommended by the School of Needlework for teaching children sewing. Wire frames for the same purpose, and also for teaching darning.

1383. **EDUCATIONAL SUPPLY ASSOCIATION, 42a Holborn Viaduct,** —School Apparatus and Appliances. Desks of best seasoned wood, strongly made for rough wear, low in price in several patterns, to meet the various wants of different class schools. Elegance of design and ornamentation have been attempted, but not at the sacrifice of strength and utility. The latest improvements have been carefully studied in the manufacture of the furniture, but all mere useless novelties have been excluded. A variety of school diagrams are shewn, including a new set of twelve "trades" suitable for infant schools and lower standards generally. Certificates of merit and for examination, quite new in design, medals, special bindings for prizes, reading sheets, manuscript reading and writing sheets, books of every description, suitable to latest Government requirements for elementary schools, are also exhibited.

1384. **THE NORTH OF ENGLAND SCHOOL FURNISHING CO., Limited, Darlington.**—School Desks and Seats, and Educational Apparatus and Furniture for Elementary and Art Schools. (1) The Modern Adjustable Desk with Dr. Roth's Chair has the following features:—Desk and Chair adjustable to the requirements of each pupil in height, in distance of desk from chair, and in the arrangement of the pad for back support. The seat is deep and thus supports the thigh. An inclined support is also provided for the feet. In illustration of the utility of such a desk and chair, the Company exhibits diagrams of pupils in good and bad positions. (2) A Desk and Seat for two scholars is also similar to the above, and made in accordance with the principles of Dr. Roth (see Group 4, Class 39). (3) In addition to the above, the Company exhibits various Single Desks, Glendenning's Patent Music Chair, Dr. Roth's Chair for home and school, Glendenning's Patent Adjustable Table, which can be raised to any desired heights for reading and writing, either while sitting or standing, the Dual Desks as supplied to the City of London Schools, &c., &c. (4) The Darlington Slateboard, being as light and unbreakable as a blackboard, but with a surface equal to the best Welsh slate. (5) The Darlington Abacus and Slateboard, for the teaching of numeration and notation. (6) The Darlington Model Map of England, fitted in a trough which will hold water, designed to give scholars a correct notion of the physical features of the country. (7) A Photograph of the same, showing the hills and valleys and rivers in relief. (8) The Kensington Art Tables and Easels. (9) Ablett's Glass Plane and Object Stand, designed by T. R. Ablett, instructor to the London School Board, and intended to be used in teaching the principles of perspective. (10) The Darlington Secretaire, designed and constructed for the use of art students and architects, being fitted with materials for their use.

1385. **GEORGE M. HAMMER & CO., 370 Strand, London, W.C.**—The intention of this exhibit is to show Furniture and Apparatus used in schools of various grades, from the Infants' to the Arts' School, and consists of—(1) Kindergarten Table and Chairs, Infants' Desk and Seat for writing or Kindergarten purposes; Lesson Stands, Abacus, Easels, Blackboards, Cabinet of Objects, Box of Form and Colour, with Diagrams. (2) Long Desks, "Phœnix" and "Osborne" patterns, forming into Backed Seats for Lecture Rooms; Clock, Cupboards, Masters' Desks, Mistresses' Tables, Large Slate in Stand, Cap and Cloak Hooks on Stands. (3) Moss's Patent Dual Desk, adapted to prevent stooping, and with most suitable inclination of Desk and Bookboard, to prevent injury to the sight. This is the desk with which all the London Board Schools are furnished. The "Imperial" and other Dual Desks. (4) Single Desks of various patterns. "The Louise," "Albany," "Bedford" "St. Paul's," &c., fitted with backs to the seats,

arranged to prevent stooping, and to give complete isolation. Very largely used in superior schools for girls. (5) Drawing Desks, with Copy Rack, Stools, Camel, Easel, &c. (6) Drawing Models, various; "Miller's" Class Models in Wood and Wire, adopted by the Science and Art Department. Messrs. Geo. M. H. & Co. also exhibit Laboratory Tables, Fume Closets, Microscope Tables, &c., in the Working Laboratory on the grounds of the Central Technical College; Desks for the Oral Instruction of the Deaf and Dumb in Room 32; and Sunday School Furniture, in the exhibit of the London School Board.

1386. **EDWARDS, H. & G., 84 High Street, Camden Town, N.W.**—(1) Kindergarten Table and Chair. (2) Models of Infants' School Galleries. (3) Form and Colour Box. (4) Clock Face. (5) School Desks (various). (6) School Seats and Forms. (7) Black Board. (8) Easels. (9) Abacus Frames. (10) Drawing Models. (11) Boxes of Bricks, &c., &c.

1387. **WAKE & DEAN, 40 Borough Road, S.E.**—The beneficial results of the new activity which Mr. Forster's Act infused into every department of educational work are nowhere more apparent than in the enormous improvement which has taken place in school furniture, especially in the most important article of school furniture—the desk. The antiquated desk, in which a child could neither sit nor stand at ease, and which tended at once to narrow the chest and curve the spine, has given way to various desks constructed with an intelligent regard to the health and comfort of those who use them; and the ingenuity of manufacturers has produced desks which serve their primary purpose none the worse because they also make good seats and tables.

The Borough Dual Board School Desk is constructed on physiological principles. There is a rest for the back at the proper height, and also a rest for the feet. In desks where the seat and top are both immovable a child cannot stand upright; in this desk the lower part of the top lifts on a hinge, and advantage is taken of it as a stand for the reading book. Each desk being separated by an interval from the next a free circulation of air is possible, and the teacher can get to the side of every pupil.

In the *English Desk* there is no flap, but the seat turns up, and thus the benefits of the preceding desk are secured. The box-top of the *English Desk* is very handy where the pupils provide their own books.

The *British Single Desk* is a modification of the *English Desk*. It is specially adapted for schools where space admits of the pupils being isolated.

Of "Convertible Desks" the *Southwark* is a good specimen. With the top inclined slightly it forms an ordinary school desk: with the top turned down it forms a comfortable backed seat; two desks placed together with the tops vertical make a capital table.

The *Improved Desk* has all the advantages of the *Southwark* with two great ones of its own: it always faces the same way, and the seat turns up.

The *Kindergarten Desk* is intended for very little children. The top is flat, to keep the sticks, peas, bricks, &c., of the "gifts" from rolling. The squares marked on it will prove very useful.

The *Southwark Slate Board* combines the advantages of the two materials from which it is made. It is lighter than slate, unbreakable, it cannot warp, and its surface never gets shiny.

The Head Master's Desk, Mistress's Work Table, and the Book Cases are all of new designs.

1388. **HEYWOOD, JOHN, Ridgefield, Manchester.**—(1) Swiss Desk, with movable sliding top, pitch pine, varnished. (2) Argillite Black Boards. (3) Reversible Back Forms, pitch pine, varnished. (4) Fixed Back Forms, pitch pine, varnished. (5) Kindergarten Desk, top lined in one-inch squares, pitch pine, varnished.

1389. **GEORGE E. HAWES, School and Church Furnisher, Duke's Palace, Norwich.**—Special patterns of single desks for use in High Grade and other schools, of a form well adapted to the comfort and health of the pupil where complete isolation is required. The Norwich School Desk, the Birmingham Desk, the Norwich Dual Desk, and the Norwich Locker Desk, are types of desks equally applicable to the dual or continuous desk. The East Anglian Convertible Desk is so constructed that by means of a spring bolt it can be instantly converted into a comfortable seat with back, to a table with seat combined, or to an ordinary desk and seat. Infants' desks, marked and arranged for Kindergarten exercises; an improved infants' gallery, fitted with hanging flaps marked for Kindergarten exercises, and supported on brackets arranged in such a manner as to be used as an ordinary gallery with seats only, or as seats and desks combined, all under the control of a child. A combined Pupil Teachers' Desk, with cupboard for stationery, platform and seat. Sliding blackboard in hard wood frame. Framed blackboard, specially prepared for chalk, and of extreme lightness. Easel of hard wood, with pointer, chalk box, and support for maps, complete, and adjustable card stand, mounted on cast iron base and castors.

1390. **BORN, PHILIP, 29 Tavistock Road, Westbourne Park, W.**—Improved Portable Desk, with movable seat, for home tuition, will prevent curvature of the spine and round shoulders. The seat and footboard can be fixed to suit any age from 6 to 16.

1391. **CURWEN, J., & SONS, 8 Warwick Lane, E.C.**—Diagrams, Pamphlets, and Books, used in teaching music by the Tonic Sol-fa method and notation, and by the Staff notation.

1392. **GARCET et NISIUS, 76 Rue de Rennes, Paris (Agents, ÉMILE FOUCARD & CO., 23 & 24 Hop Exchange, Southwark Street, S.E.)**—(1) Furniture and Apparatus for infant schools and elementary schools. (2) Apparatus and Appliances for teaching drawing and natural science. (3) Apparatus for handicraft teaching.

1393. **HODKINSON & CLARKE, Canada Works, Small Heath, Birmingham.**—(1) School Fittings. (2) Desks, constructed to facilitate the work of education and to meet in the fullest manner the requirements of the laws of health. (3) Revolving Partitions for the division of school-rooms.

1394. **REDMAYNE, MAY, & CO., Triumph Works, London Road, Sheffield.**—Patent Hallamshire Convertible Desk. This desk is of neat design, strong without being heavy, and made from the best pitch pine. By means of a simple and easy mechanism this desk can be adapted to a variety of uses, being convertible into a table and seat, flat or sloping desk, or comfortable backed seat. This desk gained the Silver Medal at the Dublin Exhibition in 1882.

1395. **BOGHANDEL, MALLINGS, Christiania, Norway.**—Educational appliances of various kinds for primary school teaching.

1396. **HAARBURGER, C., & CO., Hamsell Street, E.C.**—School Desk and Seat.

1397. **SIMON, H., & CO., Haide Strasse 55, 57, Berlin, Manufacturers of School Desks, &c.**—The Normal School Benches are manufactured in six different sizes, suitable for distinct ages (for instance, Class I. for children of 6 to 8 years old); they are made of cast iron standards and wood seats and flaps, the table flaps are divided and in one length, which can be thrown back to permit an easy cleansing of the floor. Particularly convenient for girls' schools are the desks divided by their length and depth, enabling them to be slantingly arranged, so as to form convenient reading desks, and when completely folded back yield the necessary free space between bench and table for needlework and other feminine employment. By placing the school benches at less distance (i.e., the seat extends 3 to 5 centimetres under the desk) the children are compelled to sit upright, thus preventing curvature of the spine, high shoulders, and shortness of sight. The children's desks are constructed in accordance with medical directions for home use, and the seat can be raised or lowered so as to suit every age from 6 to 16. The same result is obtained by the children's desks as by the Normal School Benches.

1398. **MYERS, A. N., & CO., 15 Berners Street, London, W.**—The Kindergarten System of Infant Education, although originating in Germany many years ago, has been for several years past more systematically and generally adopted in England. Messrs. A. N. Myers and Co. began to introduce the various Kindergarten materials and occupations to public notice about 35 years ago, at a time when the Kindergarten system was as yet unknown to English educationists in general. The firm has also since that period been engaged in the publication of numerous models and appliances to illustrate and render easy the elementary study of mathematics, mechanics, physics, natural history, arts, and manufactures, as well as producing a variety of toys and games of an educational tendency. Some of the firm's publications, which are particularly well suited for the education of the blind and of deaf children, have been adopted by several institutions; and publications for promoting physical training without apparatus may also be specified.

1399. **LAURIE, THOMAS, 31 Paternoster Row, E.C.**—(1) School Apparatus and Fittings. (2) Diagrams and Examples. (3) Books and Models.

1400. **CROSTHWAITE, R. W., Union Foundry Warehouse, Paul's Wharf, 24 Upper Thames Street, London, E.C.**—Crosthwaite's Improved School Desk. This desk adds to all the latest improvements a special advantage, viz. that although a folding up desk, it is impossible for the scholars to get their fingers between the parts folding up and that remaining fixed, as it has not a long hinge but works on a centre. The construction allows it to be transformed from a thoroughly safe and strong school desk into a reading desk with book rest, and at the same time permitting free ingress and egress.

1401. **SWANZY, H. R., F.R.C.S., 23 Merrion Square, Dublin.**—School-room Desk and Chair (for one child); capable of being adjusted to suit a child at different ages.

1402. **SCHMARJE, F., Rector, Hamburg.**—Method of teaching calligraphy invented by the Rev. J. Schmarje, of Hamburg. In this system particular attention is paid to the position of the pupil, and great stress is laid upon the manner of holding the pen or pencil, and upon

the position of the paper or slate to be used, which should be at an angle of 35° or 40° ascending from left to right, it being claimed that this position is best suited to the natural motion of the hand.

1403. **BACON, G. W., F.R.G.S., 127 Strand, W.C.**—(1) Series of School wall-maps, size 4 by 5 feet, England, Scotland, Ireland, Europe, Asia, Africa, others in progress. The special features are distinctness, bold clear lettering, no crowding, accurate outline, towns boldly shown by red dots, rivers in blue, hills in brown, railways in a special colour. Test maps formed by omitting names. (2) Picture Lessons in Natural History, 40 in the series, size 28 by 24 inches. They are coloured true to nature, and under each picture is a concise description of the animal and its uses, printed in bold letters for class teaching. (3) Picturesque Geography, size 15 by 22 inches. This series consists of 12 chromo-lithographed views of the principal features of Physical Geography, intended for art decoration in schools, and accompanied by 24 pages of description. (4) Picture Lessons in Geography for Standard II. 7 charts, 30 by 22 inches. Intended for imparting a knowledge of the simple facts of Physical Geography. (5) Pictorial View of the World. (6) Picture Alphabet. (7) The Grammar Tree. (8) Quarto Atlas of the British Isles, 100 maps with letterpress. (9) Bacon's Health Books. (10) Cosmographical Clock, surmounted with globe showing day of month, seasons, &c. (11) Cosmographical Globe.

1404. **MAC CARTHY, REV. E. F. M., M.A., King Edward's School, Five Ways, Birmingham.**—Model of a Class-room, showing Continuous Black Board, Master's Dais, and Fittings complete. The chief object of this Exhibit is to make the "Continuous Black Board" more widely known as a most effective piece of school apparatus. The surface used as a "black board" is formed by $\frac{5}{8}$ in. of Parian cement placed on the brickwork so as to be level with the rest of the (plastered) wall. Along the top runs a deal moulded capping, and along the bottom a narrow trough (to hold chalk and rubbers), $2\frac{1}{4}$ in. wide, with oak beading. The surface is 2 ft. 6 in. deep, and runs round three sides of the room at a height of 3 ft. 3 in. from the floor—except for the 9 ft. above the master's dais (10 in.), where it stands 3 ft. 8 in. above the top of the dais. The cost (exclusive of blackening) was, for the class rooms of the above school, 2s. 6d. per lineal foot. The rubbers, of which there should be one for every two scholars that the Board can accommodate, are of deal, $5\frac{1}{2}$ in. long, $1\frac{3}{4}$ in. broad, $1\frac{3}{8}$ in. high, with one surface covered with rough corduroy nailed to the sides. Cost, 2d. each. The prominent advantages of the Continuous Board are:—(1) It affords the teacher a sufficiently large surface of board to admit (*a*) of his completing a demonstration without having to obliterate the first part of it for want of space, or (*b*) of leaving demonstrations, formulæ, grammatical lists, genealogical tables, and other memoranda in the face of his class for any length of time; (2) It enables him to test simultaneously the knowledge, and methods of working of his class in a great variety of subjects, such as, map-work, mental arithmetic, mathematics, grammar, mechanics, &c., while each pupil is estimated by the public exhibition of his work; (3) It practically adds to the accommodation by abolishing easels, and presenting to a more widely visible surface. The model shows an electric bell, by means of one of which in each class room simultaneous time is kept all over the building. Great care has been bestowed upon the dimensions of the single desks, the models of which have been made for this Exhibit by Messrs. Illingworth, Ingham, and Co., of Leeds, the makers of the desks in use in the school.

Special School Fittings for Storing and Drying Clothing.

Model of a School Cloak Room (adapted, with improvements, from the best examples to be found in American Public and Normal Schools), showing Drying Apparatus, Drainage for Umbrellas, &c., now in use in King Edward's Grammar School, Five Ways, Birmingham. The object of this Exhibit is to show what can be done at a moderate cost, to promote health, inculcate habits of tidiness, and teach respect for property, in connection with school cloak rooms. The fittings of the cloak room (details of which are given below), have been designed in order (1) to isolate each scholar's outdoor clothing, so that the risks of the spread of infection may be largely diminished, and that the wet coat of one boy may not saturate the dry coat, or stain the light coat, of his neighbour; (2) to provide a system of umbrella-drainage, by which the fetid and discoloured drippings of many (cheap) umbrellas may be at once carried outside the building; (3) to subject each separate coat and umbrella to a current of hot air, and, at the same time, to obtain such a length of hot-water pipes as will raise the temperature of the room sufficiently to dry wet clothes in the interval between assembly and dismissal; (4) to reduce to a minimum the temptation to pilfer; (5) by giving each boy's umbrella a place for deposit in his own compartment, to prevent delays and confusion at dismissal, and check changes of ownership, accidental or otherwise; and (6) to introduce the scholars to perfect order and system at the very threshold of each day's school-work, and by this and other arrangements, conceived in a like spirit throughout, to develop naturally, an abiding sense of the first principles of self-discipline and morality.

The following are the detailed dimensions:—Height of partition, 5 ft. 4 in.; width, 1 ft. 2 in.; depth, 8 in.; height of ledge for gaiters, 1 ft.; height of hook for umbrella, 2 ft. 6 in.; width of drainage-trough, 3 in.; length of hot-water pipes for 120 partitions, 122 ft.—*Drainage-Troughs.*—On an asphalted floor, these are formed by sinking runnels in the asphalte. On a wooden floor, the side troughs are made by two beads cased with zinc, and the main trough is sunk in the boarding of the floor and also cased with zinc. The main channel communicates with the outside drainage. The lower panels of the door of the cloak room are fitted in with perforated zinc, in order that a current of air may be kept up through the room to carry off the vapour arising from the wet clothes when heated by the hot-water pipes. Three of these cloak rooms are in use at the above-named school, for the accommodation of 360 boys: the fittings for which were erected at a total cost (exclusive of hot-water pipes) of £105. (*Class XXXVI. East Central Gallery A., No.* 1285.)

1405. **KELLETT, JOSEPH, Laisterdyke, Bradford, Yorkshire.** — *The Royal Easel.* There are two considerations of great importance connected with the School-Easel. (1) It is continually in use, and should therefore be thoroughly adapted to the teacher's requirements. (2) It stands prominently, and always, straight before the eyes of the class, needing more than any other object in the school to be of pleasing design. The Royal Easel, as supplying these desiderata, has a large board, under easy and entire control, enabling the teacher to do his work with precision and pleasure. The board is sufficiently inclined, *and can be ruled with the* T-*square.* If required, it can be taken off and used as a drawing-board, in higher or art schools, for demonstration drawings. *The* T-*square pointer* is the handiest and neatest form of T-square for blackboard usage. It is provided with scale 6 in. to the foot, for class teaching of "Drawing to Scale;" the bold marking of the scale enabling scholars to see the method of taking and laying down dimensions. It is better adapted for blackboard ruling than the common T-square, for having a thick blade, lines of various strength can be drawn, and with greater celerity.

1406. **WALKINGTON & BROSCOMB, 19 Cursitor Street, E.C.**—(1) Walkington & Broscomb's "Paragon" Writing Slates. The slate is firmly cemented into deep grooves, making frame and slate one solid whole. (2) Slate Ruling, suitable for the various standards in public elementary schools. (3) Class Copy Books for teaching writing from the blackboard. (4) Blackboard ruled for the "Class System."

1407. **SMITH, C., & SON, 63 Charing Cross, S.W.** — Educational Wall Maps, Diagrams and Globes.

1408. **CLARKE & SHRAPNEL, 37 Walbrook, London, E.C.**—Patent Imperishable Diagrams, for Educational Purposes, comprising Specimens of Geographical Subjects, Plants, Common Objects, Animals, Mechanical Powers, Tonic Sol Fa Modulator, and Diagrams for Technical and Scientific Purposes.

1409. **TERRY, C., & CO., Little Denmark Street, Soho, W.C.**—The decoration of mission-rooms, schools, sick wards, &c., has hitherto been attended by a great drawback, viz., the difficulty of obtaining suitable designs made in such a manner that the fixing is easy and attended with little cost. For cottage hospitals and convalescent homes loose paper pictures are frequently prohibited, nothing being allowed on the walls that cannot be readily cleaned, frames being specially objected to as harbouring insects. The exhibit of Messrs. Terry and Co. embraces a selection of scripture subjects, both printed on paper and in oil colour on canvas. Six cartoons in sepia tint on gold background, form part of a series of 22 pictures illustrating the life of our Lord; any paper-hanger can affix these to plaster or brickwork, and the entire cost would not exceed 4*d.* per square foot. Selected specimens of a cheaper series (picture and reading combined) are also shown. These being a publication of the Society for Promoting Christian Knowledge, are well known and extensively used for wall decoration. They are cheaper than paperhanging, the cost being less than one penny per foot. Two samples of oil colour on canvas, "The Last Supper" and "Our Lord disputing with the doctors," are specimens of work that can be reproduced at a cost of 4*s.* per square foot. Texts in oil colour and washable, which, made by hand, cost 2*s.* 6*d.* to 3*s.* 6*d.* per foot, are now made by machine printing at one-third the cost. Specimens are exhibited in tints and colouring suitable for wall decoration.

1410. **JOHNSTONE, T. RUDDIMAN, Waverley Works, Murrayfield, Edinburgh.**—(1) Elementary Geography comprises near and distant view of land, geographical terms, mariner's compass, &c. (2) Standard Illustrations; being illustrations specially prepared to meet the geographical requirements of the 1884 Code. Diagrams for Standards V., VI., and VII. (3) Human Anatomy and Physiology recently prepared under the direction of Dr. Andrew Wilson on the most modern methods of teaching this subject. Each sheet is accompanied by a handbook. Sheet I. contains the Skeleton, Muscular System, Digestive Organs, &c. Sheet II. contains the Organs of Digestion, Circulation and Excretion. Sheet III. contains the Nervous System and Organs of Sense. (4) Maps of Europe, Africa and India, being three specimens of

T. Ruddiman Johnstone's series of Universal School Maps, as used by the London and leading school boards. (5) England Test Map, being a specimen of one of the above series, with coast line, rivers, hills, boundaries, town marks, and fully coloured, but without names. Maps of the series are published in this way. (6) Mariner's Compass, mounted on cotton, rollers, and varnished, or on strong boards varnished. This is a pictorial sheet, showing the Pole star and how an observation is taken, the magnetic pole, variation of the compass, the thirty-two points of the compass, and how positions are reckoned by points or degrees. (7) Historical Prints. The series consists of (1) Magna Charta, (2) Queen Elizabeth and her Court, (3) Oliver Cromwell dissolving the Long Parliament, (4) The Restoration.—The landing of Charles II. at Dover, (5) The Battle of the Boyne, (6) Death of Lord Nelson on board the 'Victory,' being reproductions of old prints in colours, chiefly after the works of Sir B. West, P.R.A. (8) River Basin of the Thames. Adopted by the London School Board. This map shews by contour lines the elevation of the land at each 100 feet. The shade of colour between the contour lines is altered at each 100 feet, and the gradual elevation is thus clearly depicted. The map also shows canals, county divisions, important towns and two sections across the Thames Valley.

1411. **JOHNSTON, A., 6 Paternoster Buildings, E.C.**—(1) Diagrams of Physiography, with keys. (2) Map of British Empire. (3) Useful Plants, with description. (4) Forest Trees—trees grown for their wood. (5) Fruit Trees—trees grown for their fruit. (6) Useful Grains, with description. (7) Natural History Plates. (8) Freehand Outlines. (9) Certificates. (10) Mental Arithmetic Cards. (11) Standard Copy Books.

1412. **DEYROLLE, ÉMILE, 23 Rue de la Monnaie, Paris (Agents ÉMILE FOUCARD & CO., 23 & 24 Hop Exchange, Southwark Street, S.E.)**—(1) Models and Appliances for teaching. (2) Apparatus and Models for elementary science teaching in schools (Musée Scolaire).

1413. **RICHARDSON, JOSEPH, Wesleyan School, Oxford.** — (1) *Practical Geometry Designs.* These are not copies, but a large number of problems worked out and grouped so as to form a design. Age of boys, 13 to 15. This kind of work has proved of great practical service to boys who have become connected with the building and furnishing trades. (2) *Pen and Ink Sketches*, a severer test than pencil drawing, as no marks can be rubbed out. The sketch of a cat's head was done by a boy of 13. (3) Memory Maps as exercises in freehand drawing, and also as tests of geographical knowledge. (4) *Leaves from Home Lesson Books.* Original designing, printing, and the use of colours, are encouraged to cultivate the taste. The printing preferred, being such as will be useful for labels and shop notices. (5) *Scientific Diagrams* as examples of drawing in light and shade, used to illustrate the work.

1414. **RAMAGE, MRS. DAVID, 22 Gloucester Road, Kew.**—A Genealogical Table of the Monarchs of England.

1415. **WOODING, W., City of London School.**—An improved Abacus.

1417. **CORSAN, J. R., The London Sand Blast Decorative Glass Works, 80 Gray's Inn Road, London, W.C.**—Permanent Tablets, being texts and mottoes suitable for schools, hospitals, &c., &c., engraved by the sand-blast process. *Method:*—The glass is cut or engraved by a stream of sand ejected by steam power at considerable velocity, each grain of sand removing a particle of glass. The parts not required to be cut are protected by a gelatinous composition. These transparencies are seen to best advantage when hung inside windows, and are specially suited to impress upon the mind the subject matter displayed, forming as they do so complete a contrast to the usual surroundings of schools, &c. Being a mechanical production, the cost is comparatively small. For prices and further particulars apply as above.

1418. **THE MUSICAL REFORM PRINTING AND PUBLISHING CO., 74 Fann Street, E.C.**—The difficulty of learning to play pianoforte or organ music has been acknowledged by teachers and professors of music, and is likewise admitted by all who have studied the subject. The New Notation advocated by the Musical Reform Association, while adopting the present signs in use, and also the writing of music upon a five line stave, yet proceeds upon a different method of expressing the twelve sounds contained in the octave. The root difference between the old and new methods being as follows, whereas in the old notation but seven out of the twelve sounds contained in the octave are naturally provided for by the stave, the others being indicated by signs ♭ and ♯. In contra-distinction to this the new stave provides for each one of the sounds contained in the octave, therefore signs ♭ and ♯ are not required; further the black notes of the pinaforte being expressed by the lines of the stave, and the white notes by the white spaces, the teaching of music is made comparatively easy.

For singing and harmony the new stave offers marked advantages over the old system.

The Exhibit consists, 1st, of songs engraved upon the new stave; 2nd, A series of lessons for children arranged according to and based upon the new method; 3rd, Wall charts for teaching

the theory of singing, harmony, and pianoforte playing in class; 4th, The "Magazine of Music," a journal devoted to the promulgating of the new method; in this will be found examples of music in both notations, also articles and musical compositions by authors of repute. Forthcoming numbers will contain lessons upon harmony according to both the old and new systems of notation.

1420. **DUNHAM, ROBERT CLARK, 55 Cardington Street, Euston Square, N.W.**—Dunham on Decimals.

1421, **ALLMAN & SON, 67 New Oxford Street, W.C.**—(1) *Models and Appliances for Teaching Writing.* Allman's New Code Copybooks, as exhibited, will be found upon examination to have been prepared in the most careful manner; but the system upon which the series has been based, that of a perfect gradation from the earliest lessons renders the best results certain, as will be seen by inspecting any of the fully filled up copy books which will be found in this exhibit, the writing of some of the boys, the younger ones in particular being admirable, that by Yexley (under 13 years of age), one of the Prize Winners at the Warehousemen and Clerks Schools, being almost equal to copper-plate.

(2) *Text Books.*—Attention is directed to the annotated series of extracts from standard authors, such as Gray's Elegy, Longfellow's Evangeline, Macaulay's Armada, &c., &c.; in addition to these and many other valuable books for elementary schools, there will be found carefully prepared reading books lately produced, notably the Geographical Series by Higman and the National Thrift Reader by Mrs. Lankester, which last publication embodies the most useful lessons of thrift, cleanliness, and health, placed before the reader in a style at once instructive and chatty.

1423. **SONNENSCHEIN, A.**—Apparatus for teaching Arithmetical Notation.

1424. **DUPLOYÉ, ÉMILE, 23 Quai de l'Horloge, Paris.**—Shorthand Method. Sloan Duployé books of English adaptation from above system.

1425. **PITMAN, ISAAC, Bath.**—(1) Phonetic Shorthand instruction, exercise, and reading books, printed in Shorthand characters; Chart of the Shorthand Alphabet; specimens of Shorthand; volumes of Standard Works in Shorthand; the weekly Phonetic Journal. Phonography, or Phonetic Shorthand is a system of Shorthand in which words are written phonetically, or by sound, and not according to the customary spelling of the language. Each sound of the language is provided with a separate sign, and each sign represents only one sound, consequently, when these signs are written, and a word composed of them is presented to the eye, it is as easily recognised as if it had been spoken. The system is suited to either correspondence or reporting, and readily adapts itself to foreign languages. (2) First, Second, Third, Fourth, and Fifth Books in Phonetic Reading. Several volumes printed in Phonetic Spelling.

1426. **PITMAN, FREDERICK, 20 & 21 Paternoster Row, E.C.**—(1) Shorthand Graduated Text Books, Diagrams, and various works entirely in shorthand, appliances, &c. (2) Music: Text Books for the piano, harmonium and other instruments.

1427. **MATTAN, ALBERT O., Sorel, Province of Quebec, Canada.**—Specimens of Penmanship.

1428. **BEMROSE & SONS, 23 Old Bailey, E.C.**—Writing Charts: A substitute for the blackboard, designed for class teaching in Infants' Schools and the First Standard; lithographed in white on a black ground, and mounted on stout boards, 32 by 22 inches, eyeletted and strung. A series of seven charts. Code Copy Books, arranged to meet all the requirements of writing in the New Code. Both the sloping and upright styles are introduced into the books for all Standards. Thirty books, twopence each. Picture Spelling Cards for infants. Suitable for the nursery wall and for Object Lessons in Infants' Schools. Adapted to Standard I., mounted on stout boards, measuring 28 by 22 inches, eyeletted and corded for hanging up. Printed in colours. A series of four cards.

1429. **CASSELL & COMPANY, Limited, La Belle Sauvage Yard, Ludgate Hill, E.C.**—Various works on Health, including the "Book of Health," by eminent physicians and surgeons. "Our Homes, and how to make them Healthy," by leading sanitary authorities. "The Family Physician," by physicians and surgeons in the principal London hospitals. "The Handbook of Nursing," "The Ladies' Physician," "Manuals for Students of Medicine," by leading teachers in the principal medical schools, containing all the information required for medical examinations of the various colleges, halls, and universities in the United Kingdom and the Colonies. Works on Cookery and Domestic Economy, including "Cassell's Dictionary of Cookery," "Cassell's Domestic Dictionary," "Cassell's Household Guide," "A Year's Cookery," "Choice Dishes at small cost," &c. Recreative Science and Amusement: "Coloured Illustrations from Familiar Garden Flowers," "Familiar Wild Flowers," "Cassell's Popular

Gardening," "Canaries and Cage Birds," &c., "Cassell's Book of Sports and Pastimes," "Transformations of Insects," "The World of the Sea," &c. Natural History, &c.: "Cassell's Popular Natural History," "Animal Life Described and Illustrated," "Wild Animals and Birds." Popular Science: "Science for All," "World of Wonders," &c. Education: (1) Elementary School Books, Cassell's Modern School Series, including Modern School Readers, Historical Readers, Geographical Readers, Arithmetics, Graduated Copy Books, &c. (2) Drawing and Water Colour Painting: including Cassell's Popular "How to Draw" series, Freehand Drawing Copies, Flower Painting in Water Colours, Figure Painting in Water Colours, Water Colour Painting, Sepia Painting, &c. Technical Education: Manual's of Technology, edited by Prof. Ayrton, F.R.S., and Richard Wormell, D.D., M.A. "Cassell's Technical Educator," "Cassell's Technical Manuals," "The Practical Dictionary of Mechanics," &c. Cyclopædias, &c.: "The Encyclopædic Dictionary," "The Dictionary of Mechanics," "Cassell's Concise Cyclopædia," &c., and various other Educational and Students' Manuals.

1430. **MARTIN, W., & CO., 67 Nile Street, Glasgow.**—Solid Alto-Relievo Models, or Raised Maps of Continents and Countries, for instruction in geography and physiography; of strong and durable make for school wear, hard and tough in material. The following are now published:—

(1) Europe, Asia, Africa, N. America, S. America, Oceania; size, framed, 22½ by 18½ in.

(2) Europe, in Seven Sections; average size of framed sections, 11½ by 10 in.

(3) Italy and the Alps, a superb and artistic model, in which is included the Rhone Valley, Switzerland, &c., size, framed, 22¾ by 20½ in.

(4) Sicily, interesting and instructive, on account of the enlarged representation of the volcanic mountain, Etna; size, framed, 22½ by 18¼ in.

(5) The Alto-Relievo mode of teaching geography, now widely adopted, is found the most effective. The youngest scholar, on seeing the world modelled in its real aspects, is interested, and, with ease and rapidity, forms true notions of the earth from these reproductions of its surface in actual elevation and depression. Being carefully constructed to altimetric and planimetric scales, the leading facts of physical geography are presented visibly and palpably to the pupil. Moreover, the 7 sections of Europe being modelled to the same scale, the relative extent and altitudes of the several countries are realized at sight: to look is to learn. The oral instructions of the teacher, and the descriptive letterpress of Geographical primers, are embodied and presented in these models at a glance: the mimic mountains and mountain chains, peaks, passes, slopes of land, basins drained by rivers, the line of perpetual snow, the raised land and the smooth ocean, all combining to put the scholar in possession of the true geography at sight.

1431. **MATTHEWS, W. R., Board Schools, Chiswick.**—Specimen of the black board map used in the Chiswick Board Schools. The lines of latitude and longitude are cut into the substance of the board in order to render them permanent, and thereby the restoration of the outline, should it become erased by use, a matter of extreme simplicity. It is found that the chalk used upon the board, during its employment for the purpose of illustrating any lesson in which geographical questions occur, is sufficient to keep these lines perfectly distinct without rendering them obtrusive. The physical features may be painted in as shown in the left-hand portion of this exhibit, or—which is by far preferable in the hands of an experienced teacher—the whole may be left blank, as shown in the right-hand portion, to be filled in with chalk either by him or by the children as the lesson proceeds. The use of these maps has tended to make geographical lessons exercise the intelligence and memories of the children, and to prevent the confusion usually created in their minds by a multitude of names printed in all kinds of type at every conceivable angle with each other. As an aid to class map drawing they have been found almost invaluable.

1432. **LEAKE, J. W., Teacher at Bowman's Place Board School, Holloway, London.**—Geographical Object-Teaching Charts. These charts contain matter which cannot be taught from maps, e.g. statistics, facts relating to climate and surface, wild animals; animal, vegetable, and mineral products; manufactures, imports, exports, trade with England; coinage and English equivalents; types of the various peoples in each country; costumes, &c. The colonial charts contain, in addition to the above, price of provisions and clothing, rates of wages, and cost of passage. Last year the boys of this school made cards, showing the productions and exports of the British isles and the colonies, for their home-lessons. The work was voluntary on their part, and they were enthusiastic over it.

1433. **STANFORD, EDWARD, 55 Charing Cross, London, S.W.**—(1) Stanford's Large Series of Wall Maps. (2) Physical Series of Wall Maps. (3) Extra Large Series, two maps as specimens. (4) Geological and Stereographical Maps of the British Isles. (5) Library Map of London, coloured according to School Boards. (6) Specimens of the Intermediate, Smaller, and Outline Series of School Maps, Natural History Diagrams, &c., &c.

1434. **GRIFFITH & FARRAN, Educational Publishers, St. Paul's Churchyard, London.**—Exhibit Reading Books for public Elementary Schools, Standard Authors Readers, Blakiston's Geographical Readers, Oscar Browning's Historical Readers, Darnell's Copy Books, Arithmetical and Algebraical Manuals, Exercises on English, Manuals and Appliances for simultaneous class teaching of needlework, Household Handbooks on Hygiene, &c., Books for Prizes and Rewards in Sunday and Day Schools.

1435. **SHELMERDINE, J., Raunds National School.**—Map of England and Wales designed in relief. The object of the design is to aid teachers in the instruction of the younger children in Elementary Schools. The principle of the design is to represent nature in miniature rather than by picture or plan.

1436. **GEORGE GILL & SONS, 23 Warwick Lane, Paternoster Row, E.C.**—This exhibit is entirely confined to Educational Works used in the Elementary and Middle Class Schools of the country. They are as follows:—(1) In Elementary Schools. Works on every subject of the Education Code, arranged in Standards and otherwise. (2) In Middle Class Schools. These are specially prepared as useful handbooks for pupils preparing for the Oxford and Cambridge Local, the Society of Arts, and other Examinations. (3) In Schools of Art, and Drawing Classes in connection with the Science and Art Department. These have been specially written and designed for pupils preparing for the annual examinations in Freehand, Practical Geometry, Model, and Linear Perspective, in both the 1st and 2nd Grades. Numerous manuals.

1437. **HUGHES, JOSEPH, 4 Pilgrim Street, Ludgate Hill, E.C.**—Educational Publications.

1438. **SOCIETY FOR PROMOTING THE KNOWLEDGE OF FOREIGN LANGUAGES (THE), (Wholesale Warehouse, 13 Paternoster Row, E.C.),** have issued a series of volumes, also issued in parts, which by a new and much approved method, introduced by Mr. C. Hossfeld, enable learners readily to acquire, either by self-instruction or in class, a thorough knowledge of either French, German, Spanish, or Italian. Fourteen Progressive Numbers are prepared for each language, containing a Complete Grammar, Exercises, Vocabulary, and Key; a Hundred Pages of Dialogues on every subject; a Complete Reader, with Notes to assist in translation; Instructions on Commercial Correspondence.

COLLINS, WILLIAM, SONS & CO., Limited, Glasgow. (*See Class* 51.)

EDWARDS, H. & G., 84 High Street, Camden Street, N.W. (*See Class* 47.)

MILLER, S. A., Orange House, College Park, Lewisham, S.E. (*See Class* 47.)

Class XLIX.

(*Royal Albert Hall.*)

Domestic Economy and other Forms of Technical and Industrial Education for Girls.—(*a*) Models and Apparatus for the teaching of Cookery, Housework, Washing and Ironing, Needlework and Embroidery, Dressmaking, Artificial Flower-making, Painting on Silk, Pottery, &c.; (*b*) Specimens of School Work.

1443. **WILSON, CHARLES, & SONS, Carlton Work, Leeds.**—The Gas Kitchener shown by this firm was invented by them for the Leeds Board Schools, and has since been adopted by Birmingham, Sheffield, Bradford, Batley, and Blackburn School Boards for teaching cookery in their schools. The Kitchener comprises two baking ovens, with boiling burners on the top; between the ovens is a gas fire, which possesses all the advantages both in appearance and use of an open coal fire, and can be used for roasting, grilling, &c. The whole is mounted on a platform on castors, so that it can be moved to any part of a class or lecture-room. The Kitchener is ready for use a few minutes after lighting, without any trouble. The cost of gas is less than coal. After the lessons, the stove is run into a cupboard, as shown in Mrs. C. M. Buckton's book on "Food and Cookery." Thermometers can be fitted to oven-doors.

1444. **SCHILD, MARIE, 10 Southampton Street, Strand, London, W.C.**—*Teaching Children to make their own Dolls' Clothing.*—To encourage children in the exercise of their needle, and also to give them some knowledge of the art of dress cutting and making up, Madame Schild has issued a series of four distinct sets of patterns for dolls' clothing, representing dolly as a baby, girl, young lady, and lady. Each series consists of the patterns of dress and underclothing complete, in an envelope, accompanied by a book describing and illustrating each toilette. In order to ensure correctness, and give children a more thorough

knowledge, each garment is cut in different coloured paper, and diagrams of each piece of the various garments are given, arranged in the proper order of joining, so that each series, or the whole, will form an instructive and amusing present. If while giving children presents of dolls you can also buy with them patterns of the dresses and underclothing cut to fit that doll, it would considerably enhance the value of the present to the child, and make her desirous to begin at once to cut out and make them up, thus teaching her in play an accomplishment viz. the proper manner to cut out and make up her own dresses, which may be most useful to her in womanhood.

1447. **SCHOOL OF COOKERY AND DOMESTIC ECONOMY, 6, Shandwick Place, Edinburgh (MISS GUTHRIE WRIGHT, Hon. Sec.)**—Apparatus used for instruction in Cookery and Domestic Economy, and Examples of School Work.

BRADFORD, T., & CO., 140-143 High Holborn, W.C. (*See Machinery in Motion, Western Gallery.*)

GRIFFITH & FARRAN, St. Paul's Churchyard, E.C. (*See Class* 48.)

MYERS, A. N., & CO., 15 Berners Street, Oxford Street, W. (*See Class* 48.)

SCIENTIFIC DRESS - CUTTING ASSOCIATION (THE), 272 Regent Street, W. (*See Western Gallery, Outside.*)

Class L.

Handicraft Teaching in Schools for Boys.—(*a*) Apparatus and Fittings for Elementary Trade Teaching in Schools; (*b*) Specimens of School Work.— (*See Central Institution of the City and Guilds of London.*)

Class LI.

(*Royal Albert Hall.*)

Science Teaching.—(*a*) Apparatus and Models for Elementary Science Instruction in Schools; Apparatus for Chemistry, Physics, Mechanics, &c.; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of the School Work in these subjects.

1449. **ORME, J., & CO., Manufacturers and Importers of Scientific Apparatus and Chemicals, 65 Barbican, London, E.C.**—This exhibit comprises a selection of the apparatus approved by the Science and Art Department, for teaching chemistry, electricity, acoustics, light and heat; and towards the purchase of which Government aid is granted to the extent of 50 per cent. The chemical apparatus includes Hofmann's tubes, thermometers, flasks and retorts, of the finest Bohemian glass, retort stands, blowpipes, and a 20s. set of apparatus as supplied to the students at Bartholomew's Hospital Laboratory. Also pocket aneroid barometers. The electrical apparatus includes plate machines, magneto machines, batteries, Ruhmkorff's coils, vacuum tubes, &c. A Tate's air pump and a variety of apparatus for pneumatic and acoustic experiments to illustrate those sciences; and for heat and light a Ferguson's pyrometer, Gravesand's ring and ball, cryophorus, Daniel's hygrometers, glass mirrors, prisms, and a Newton's disc for the lantern. A special feature in the exhibit is a series of glass bottles for acids, &c., having labels ground out of the glass by the sand-blast process. These labels are imperishable, and the cost of the bottles is much lower than that of the enamelled label bottles generally in use.

1450. **GRIFFIN, JOHN JOSEPH, & SONS, 22 Garrick Street, Covent Garden, London, W.C.**—Apparatus for the practical illustration of Twining's "Science Made Easy," course of 10 lectures, comprising the following subjects:—Mechanical Physics; Chemical Physics; Inorganic Chemistry; Organic Chemistry; Botany; Zoology; Human Anatomy and Physiology. Apparatus for Elementary Science Instruction in the following subjects:—Acoustics; Light; Heat; Electricity; Magnetism and Galvanism, comprising:—Acoustics, Savart's Apparatus; Boyle's Tube; Siren. Light, Mirrors; Spectroscope; Prisms; Lenses; Reflection Apparatus. Heat, Contraction Apparatus; Gravesand's Pyrometer; Daniell's Pyrometer; Mason's Hygrometer; Six's Thermometer. Electricity, Henley's Discharger; Electric Pendulum; Sir W. Thompson's Electrometer; Coulomb's Torsion Electrometer; Electrophorus; Henley's Pith Ball Electrometer; Æpinas Condenser; Aurora Globe Electroscope. Magnetism and Galvanism, Grove's Battery, Galvanometers; Induction Coils; Ampère's Stand; Bichromate Batteries; Electro-Magnets; Dipping Needles; Vacuum Tubes; Electro-Magnetic Engine; Electric Lamp and Lantern; Electric Bells. Various, Tate's Air Pump; Baroscope; Leslie's Apparatus for Freezing Water; Barker's Mill; Tantalus Cup; Lift and Force Pumps; Archimedean Screw.

1451. **CETTI, E., 36 Brooke Street, Holborn.**—Apparatus for Science Instruction Philosophical Instruments.

1452. **HARVEY & PEAK, Beak Street, Regent Street, W.**—Heat, Light, Acoustic Electrical Test and Various Apparatus, including Thermopile, Galvanometers, Prisms, Syrens Monochord, Organ Pipe, Electro Magnet, Resistance Coils, Bridge, Rheostat, Keys, Commutator, Vertical Projector, Maxwell's Dynamical and Colour Tops, &c.

1453. **NEWMANN, O., & CO., 40 Cheapside, E.C.; 7 Trafalgar Buildings, Charing Cross, W.C.; & at Berlin.**—Apparatus and Instruments for teaching science, physics, dynamics, acoustics, mechanics, natural history, geometry, and agricultural science. Collections of Apparatus and Instruments for elementary schools, technical schools, and universities. (1) Dynamo-Electric Machine, with handle movement. Supplies a current sufficient for all experiments to be made in schools and in the laboratory; has the effect of nearly 20 Bunsen elements. (2) Concussion Apparatus, to illustrate the action of rebounding bodies. (3) Parallelogram of forces, illustrating the division of force. (4) Greatly improved inclined plane, adjustable, with very little friction. Also other apparatus for illustrating and investigating the laws of heat and light, hydrostatics, hydraulics, capillary attraction, &c. (5) Among electrical appliances is exhibited a new electric magnetic inclinatorium, with which the following experiments may be most clearly demonstrated to a great circle of pupils: (*a*) The attraction of iron by a magnet; (*b*) Repulsion of magnetic poles of the same name and attraction of unequal ones; (*c*) The phenomenon of declination; (*d*) The magnetic action of the terrestrial globe upon soft iron, and many other laws.

Geometry.—Collection of geometrical bodies (hollow), made of metal, which may be filled with sand or water, and so some of the most perplexing geometrical axioms may be demonstrated in the clearest manner, so that even the least intelligent pupil will be able to grasp it. Set comprises 34 bodies.

Agricultural Science.—Dissectible Models, illustrating the various ways of grafting. Model 1 illustrates grafting shown on an apple-tree; 2, grafting by the side on a pear-tree; 3, grafting in a slit made on an apple-tree; 4, grafting in the bark on an apple-tree; 5 inoculation (*acugeln*) illustrated by a pear model.

Natural History.—(1) Metamorphoses of insects. (2) In two glass vases, the various shaped feet of birds, according to their classification.

1454. **JOHN COTTRELL, 21 Albemarle Street, W.**—Apparatus for experimentally illustrating Professor Tyndall's "Lessons in Electricity." The apparatus is cheaply but efficiently constructed, for use in schools, for science teachers, and private students. It is identical with the apparatus used by Professor Tyndall, in a course of six Lectures delivered before a Juvenile Auditory at the Royal Institution of Great Britain. By its means, and the use of Professor Tyndall's "Lessons," a course of instruction in Elementary Electricity can be experimentally demonstrated.

1455. **BECK, R. & J., 68 Cornhill, E.C.**—(1) Microscopes, School Microscopes, Students' Microscopes, Microscopes specially made for the investigation of Bacteria, Petrological Microscopes, Dissecting Microscopes. (2) Microscopic Apparatus, New Achromatic high-angled condensers, with special diaphragm arrangements for modifying and controlling the light. (3) Staining Fluids, for demonstrating bacteria, including Dr. H. Gibbes' double stain for the tubercle bacillus, New Purple Stain, Methyl Blue, Gentian Violet. (4) Microtomes, New Ether Spray Freezing Microtome, in which the ether fumes are conveyed away, thus getting rid of smell, and in which the minimum amount of ether is used. (5) New Lamp, with Herschel condenser and delicate adjustments for changing the position and character of the light. (6) All requisites for preparing pathological, physiological, and other kinds of microscopic objects. (7) Specimens of Bacteria and pathological objects. (8) Lenses and prism used in the manufacture of optical instruments.

1456. **FROST, A. J., 6 Westminster Chambers, Victoria Street, S.W.**—(1) Clark's Improved Transit Instruments, 18-in. and 13-in. (2) Clark's Window Transit Instrument. (3) Clark's Treatise on the Transit Instrument as used for obtaining time. (4) Clark's Manual of Transit Instrument as used for obtaining time. (5) Clark's Annual Transit Tables.

The science of astronomy as a branch of education has been hitherto strangely neglected,—admittedly the most noble of sciences, it is calculated beyond all others to enlarge the mind, and to give the student artisan or manufacturer the truest and grandest ideas of magnitude, order and precision.

The Transit Instrument is the most important instrument used by astronomers for obtaining time, and is practically the source of our time throughout the world. Its use has been hitherto confined almost exclusively to astronomers, in consequence chiefly of its high cost and the necessity of making somewhat troublesome calculations from the Nautical Almanac for each observation.

The exhibitor has, in conjunction with others, made strenuous endeavours for some years past to popularise the use of the Transit instrument.

1. By improving the construction of the instrument and reducing its cost. 2. By publishing a treatise on the Transit Instrument with numerous tables, also a popular Shilling "Manual" on the subject. 3. By publishing annually a series of "Transit Tables," containing the daily transits of the stars in ordinary Greenwich time, with instructions for use throughout the world.

The instruments exhibited are—

1. The 13-in. and the 18-in. Transit Instrument, with apertures of 1⅛-in. and 1¾-in. respectively; the improvements consist in the general design, in the novel mode of attaching the instrument to its base so as to avoid flexure, in the vernier arm which permits the instrument to be adjusted indoors, and merely laid in its stand when used, and in the firmness with which it remains fixed in position while observing. In these instruments the use of the small secondary level becomes unnecessary. The cost of the instrument is reduced to about one-third of its ordinary cost, and this has been effected without any sacrifice of accuracy, while the quality of the workmanship speaks for itself. 2. The "Window Transit." This is an entirely novel form of instrument, of great strength and compactness. It is a most convenient form for ordinary use and is also specially adapted for fixing on a window sill; its cost is even less than that of the ordinary forms. 3. Meridian marks of a highly improved quality. 4. A "Treatise on the Transit Instrument as applied to the determination of time." This is the first complete treatise on the subject published, and contains a variety of tables, many of which are believed to be of great utility and entirely new in character. 5. A popular "Manual of the Transit Instrument," containing in the simplest form all the instruction necessary for fixing and using the instrument. 6. "Transit Tables" (published annually), giving the time of transit of about 25 stars and planets for every day in the year, with instructions for use. These tables are suited for all parts of the globe, and are so arranged that no calculation of any kind is required.

Apart from its utility for the purpose of obtaining time, the practical manipulation of the Transit Instrument forms the very best introduction to the science of astronomy, and its educational merits are so great that its use ought to be generally taught in all science schools and technical institutions throughout the kingdom.

1457. **BAPTY, S. LEE, 65 Blackheath Road, Greenwich.**—(1) Photographic Enlargements of Microscopic Objects, illustrating the physiology of plants and animals, comprising an assortment of wood sections, transverse, radial, and axial (especially prepared for purposes of comparison), stem and leaf sections, insects, and portions of insects, &c. (2) Transparencies of the above, suitable for use with the optical lantern.

1458. **ATKINSON, LEO, 121 Greenwich Road, Greenwich, S.E.**—Photo-Micrographs, on a scale suitable for illustrating physiology, botany, zoology, enabling teachers to show structural detail to entire classes which could only otherwise be shown separately in the microscope. Any subject can be reproduced as a transparency for projection with the optical lantern, and demonstrators can have their own subjects or sections photographed to meet their special requirements.

1459. **SWIFT & SONS, 81 Tottenham Court Road, W.**—(1) Swift and Son's Histological Microscopes. (2) University Monocular Microscope, with Objectives, in case. (3) University Binocular Microscope, with Objectives, in case. (4) Challenge Binocular Microscope, with Objectives in Cabinet. (5) Popular Achromatic Condenser, with Combination Spot Lens and Polariscope. (6) Achromatic Condenser, a perfect substitute for all under stage illuminating apparatus. (7) Ice Freezing Microtome, for class work. (8) Ice Freezing Microtome, new patented form, employing ether.

1460. **HOBY, J. CHARLES J., 29 South Street, Thurloe Square.**—(1) Cabinet of three Trays, containing rocks, fossils, &c. (2) Box, small collection of minerals.

1461. **RUSSELL, THOMAS D., 78 Newgate Street, E.C.**—(1) Collections to illustrate Dr. Geikie's Science Premier of Geology, and the First Book of Geology by Dr. Davis. (2) Collections of Typical Rocks and Typical Rock Sections.

1462. **GREGORY, JAMES R., 88 Charlotte Street, Fitzroy Square, W.**—Geological Collections illustrating elementary treatises on the subject, such as Professor Geikie's Geology Primer and other manuals. Mineral collections to illustrate Dana's Mineralogy and Mr. Rutley's small manual; these contain examples of most of the minerals employed in the arts and manufactures, as well as the chief metallic ores. Petrology is especially illustrated by collections to use with Rutley's "The Study of the Rock." Microscopic sections of

Rocks. very carefully sliced, and so thin as to be transparent in order that by means of the microscope and other optical appliances, the mineral constituents of the rocks may be identified Elementary Collections of Fossils illustrating Palæontology. Fossils are partly included in the geological collections, together with rock specimens, and minerals, as exhibiting the chief materials forming the crust of the earth.

1464. **TOWNSON & MERCER, 89 Bishopsgate Street Within.**—Apparatus for Scientific Instruction in Schools.

1465. **GEORGE CUSSONS, Cheetham Hill, Manchester.**—Whilst the subject of descriptive Geometry is the basis of mechanical and architectural drawing, it is directly useful in many of the trades and professions, as Joinery and Carpentry, Tin-plate Work, Boiler Making, Mechanical Engineering, Military Engineering.

The apparatus is designed to teach and illustrate the science of descriptive geometry, as taught in the Military, and Science and Art Schools.

A knowledge of the subject depends less upon information and formula derived from technical books, than upon a proper conception of the actual conditions of the problem.

If the student comprehends clearly what is required, and can also conceive the existence of lines and surfaces in space, and their relations to certain fixed planes, he may then be able to give correct solutions based upon his own reasoning.

The apparatus shows the relations of planes, lines, projections, traces, &c., as they actually exist with respect to two co-ordinate planes.

Each model can be closed up neatly when out of use to about the size of a small drawing board.

The minor model is designed to show to a class the elevation and plan of an object, and also the effect produced upon the elevation by an alteration of ground line.

The teacher may also check the students' work by reference to the picture of the elevation in the minor.

A number of useful models of form are supplied with the apparatus, also a universal support to hold them.

1466. **COLLINS, WILLIAM, SONS, & CO., Limited, Glasgow.**—(1) Science Text Books: Elementary subjects, 1 to 25; Advanced Subjects, 1 to 22; Diagrams. (2) Science and Art Text Books: Drawing Books, Freehand, Advanced. Practical Geometry; Drawing to scale; Test Examination Papers and Cards.

1467. **CHARLES THOMAS MILLIS (Evening Lecturer on Practical Geometry and Metal Plate Work at the Technical College, Finsbury), 4, Northumberland Terrace, Regent's Park Road, N.W.**—Models illustrating Projective Geometry.—(1) Central Projection. (2) Conics as Projections of Circles. (3) Parallel Projection. (4) Orthographic Projection. (5) Penetration and Wire Skeleton Models of Solids. Diagrams.

Projective Geometry.—These models are made to illustrate the projection of plane figures from one plane to another, the projecting rays starting from one point called the *centre of projection*. The line in which the two planes meet is called the *axis of projection*. Out of this general case special cases arise if either the axis or the centre be moved to an infinite distance. In the first case the two planes become parallel and the figures will be similar. In the second case the projecting rays become parallel, and the projection is called parallel projection. If in this case (see Model 1, 2, and 3) the rays are perpendicular to the plane to which the figure is projected, the projection is called orthographic, which is the one used in mechanical and engineering drawing. Both the plan and the elevation in these drawings are orthographic projections. The models illustrate the various kinds of projection mentioned, and may be divided into three groups.

Group 1.—*Central projection* general case. Model 1 A shows that the points in lines which are projected to infinity, lie in the line which is projected to infinity. 2 A, 3 A, and 4 A; these models show that the projections of circles are curves of order 2 and class 2 (conics), because all lines cutting the circles in two points are projected into lines which cut the projections of the circles in two points; and the tangents drawn from points to the circles are projected into tangents to the curves which are the projections of the circles. In the case of the circle (3 A), the tangents at the points of contact of intersection of the circle and line projected to infinity, are projected to tangents to the curve (hyperbola), whose points of contact are projected to infinity. Hence they become the asymptotes to the hyperbola. The models also show that the projections of circles are either parabolas, hyperbolas, or ellipses, according as they have one, two, or no points in common with the line which is projected to infinity. Model 5 A illustrates "Desargue's" Theorem:—"If the lines joining corresponding verticles in two triangles are concurrent (meet in a point), then the intersection of corresponding sides are colinear (three points in a line)." Model 6 A shows that figures projected from a point to parallel planes (axis at infinity) are similar figures.

GROUP 2.—*Parallel projection.*—7 A model shows the projection of a circle by parallel rays (centre at infinity).

GROUP 3.—*Orthographic projection.*—Model No. 1 consists of moveable planes, showing a cube on an inclined plane, and method of placing a line on a plane. No. (2) is a model with moveable planes and a wire model showing the lines used to find the dihedral angle between. The semi-cone serves to show a method for finding the inclination of a plane to the horizontal or vertical planes. (No. 3) shows how to find the plane containing two intersecting lines given by their inclinations; also a moveable auxiliary plane. No. 4 is a moveable model of the co-ordinate planes, with two inclined planes, &c. Wire models of solids and penetration models useful for art purposes as well as projection. Diagrams of problems in projective geometry of which the models are illustrations.

1468. **OSTERLOH, PAUL, Fabricant von Botanischen und Zoologischen Modellin, Amsterdam.**—Models of Food Parasites.

1469. **BROCAS, FREDERICK YORKE, 4 Mill Street, Hanover Square, W.**—(1) Plants, dried and mounted. (2) Seeds and Nuts. (3) Portfolios and Books of Illustrations. (4) Apparatus for collecting, &c.

1470. **STRAUBE, J. Gitschiner Strasse, 109 Berlin.**—Astronomical and other Maps.

1471. **ESCLANGON, J. A. 33 Howley place, Maida Hill.**—Astronomical Chart of the Universe, prepared by M. Laporte.

1472. **ORMEROD, E. A., Dunster Lodge, Spring Grove, Isleworth.**—The Diagrams of the Royal Agricultural Society and the "Manual and Guide" have been issued as an endeavour to place some amount of information on the important subject of preventing insect ravage to the crops, in such a form as, by plentiful illustration and plain English wording, would make the information clear for common farm use. The result has shown that by thus making the subject in some degree accessible to those who have no leisure for abstruse study, constantly increasing attention is being paid to it throughout the country; and the plan of sound, but at the same time simple and practical, instruction on the matter is now found to answer, when taken up as a part of regular school instruction in an agricultural district.

1473. **MOORE BROTHERS, Osteologists, Disarticulators, &c., 36 Newsham Drive, Liverpool.**—Class Mammalia; Order Bimana; disarticulated human skull, hand and foot, sectionised limb-bones, &c. Order Quadrumana, disarticulated skull, hand, foot, ribs of chimpanzee, skeleton of baboon. Order Lemuridæ, skeleton of lemur. Order Rodentia, skeleton of porcupine. Order Ungulata, skeleton of gazelle. Order Cheiroptera, skeleton of flying fox. Order Carnivora, skeleton of badger and sectionised skeleton of cat. Class Aves: Order Raptores, skeleton of sociable vulture. Class Reptilia: Order Crocodilia, skeleton of crocodile. Order Ophidia, skeleton of Python. Class Crustacea and Arachnida: Order Decapoda, disarticulated exoskeleton of lobster, crab, king crab, &c. Enlarged models of nerve systems of freshwater mussel, cockroach, earthworm, and medicinal leech. All the disarticulated and sectional specimens are lettered and numbered specially for educational purposes. The disarticulated specimens are intended to be of use not only to museums and public institutions, but especially to individual students. They are all capable of being taken to pieces for close examination and comparison, and are fully and carefully lettered in accordance with the best English text books.

1474. **GEORGE GILL & SONS, 23 Warwick Lane, Paternoster Row, E.C.**—The Anatomical Models exhibited by this firm are used to illustrate the teaching of Animal Physiology in Science Classes and Schools. (See Schedule IV., Education Code, referring to the teaching of Specific Subjects in schools, also Science Directory, Subject XIV., Animal Physiology.) There are altogether 39 pieces, of which the models exhibited are a selection. Text Books in Animal Physiology (Subject XIV.); Text Books in Animal Physiology (Specific Subject). Text Books of Agriculture (Subject XXIV), Elementary Stage. Text Books in Agriculture, Advanced Stage. Text Books in Hygiene (Subject XXV). Elementary Stage. Text Books in Hygiene, Advanced Stage. Albany Science Readers. (See Schedule II. Education Code.) 1st Series (Animal and Plant Life). Standards III.-VI. 2nd Series (Physics), Standards III.-VI.

1475. **MITCHELL, W. STEPHEN, Walton Villas, Putney.**—(1) Collection of Apparatus for the experimental teaching of the scientific principles on which our present knowledge of the chemistry and physiology of foods is based. (2) Tables showing the more important practical results arrived at.

1476. **REYNOLDS, JAMES, & SONS, 174 Strand, London.**—(1) *Astronomical Diagrams.* These illustrate in an effective manner the principal phenomena, including general view of the solar system, the seasons, views of the sun and moon, phases of the moon, spring and neap tides, eclipses, &c. With description. Size 50 × 60 ins. (2) *Geographical Diagrams.*—A

series of maps of the world showing the physical features of the land, movements of the waters, distribution of the winds, rain, and climates, volcanic and earthquake regions. With description. Size 60 × 60 ins. (3) *Geological Section of the Earth's Crust.*—A coloured diagram, exhibiting the various geological formations, their order, outcrops at the earth's surface, and other geological phenomena. Descriptive notes at foot of diagram. Size 72 × 20 ins. (4) *Coloured Diagrams of Machinery, Manufactures, &c.* The series consists of twenty-seven various diagrams, designed to illustrate in a comprehensive manner the principles and mode of action of each subject treated. Three are exhibited as specimens, viz. The Steam Engine, the Clock, and the Barometer. Descriptive notes at foot. Size 36 × 24 ins.

BATCHELOR, H. & T., West Kensington, opposite West Kensington Station. (*See Machinery in Motion, Western Gallery.*)

GARCET et NISIUS, 76 Rue de Rennes, Paris (Agents, EMILE FOUCARD & CO., 23 & 24 Hop Exchange, Southwark Street, S.E. (*See Class* 48.)

HAMMER, GEORGE M. & CO., 370 Strand. (*See Class* 48.)

HUGHES, JOSEPH, 4 Pilgrim Street, Ludgate Hill, E.C. (*See Class* 48.)

MYERS, A. N., & CO., 15 Berners Street, Oxford Street, W. (*See Class* 48.)

NORTH OF ENGLAND SCHOOL FURNISHING CO., Limited (THE), Darlington. (*See Class* 48.)

SENNET, A. R., 62 Hatton Garden, E.C. (*See Class* 26.)

Class LII.

(*Royal Albert Hall.*)

Art Teaching.—(*a*) Apparatus, Models, and Fittings for Elementary Art Instruction in Schools; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of Art Work, Modelling, &c., in Schools.

1480. **WOOD, GILBERT, 175 Strand, W.C.**—A series of reproductions of works of art by eminent painters, architects, and decorators, published in the 'Architect Journal.'

1481. **D. BRUCCIANI & CO., 10 Russell Street, London, W.C.**—(1) Statues from the antique. (2) Busts from the antique. (3) Ornaments, Pilasters, Reliefs, &c., from the antique. (4) Renaissance and Gothic Fruit, Flowers, and leaves, cast from nature. (5) Hand and Feet from the antique and from nature. (6) Statuettes and Sections from the antique, as supplied by appointment to the Government Schools of Art.

1482. **ABLETT, T. R., 36 Wemyss Road, Blackheath, S.E.**

Class Teaching of Drawing in School.

(1) *Coloured Written Drawing.*—The kind of stroke hitherto used only in writing is employed in representing the forms of flat objects which are similar to the curves of letters, first in delineation of those objects, and afterwards in the formation of a running pattern. Common Objects (26, 38). Coloured Written Drawing (14, 32).

(2) *Judgment at Sight.*—Rods for length (58). Ruler, with slide, for proportion (55). Shutter, for comparison of vertical and horizontal distance (57). Disc, for angles (56). The rods, ruler and shutter are M. Pillet's invention.

(3) *Memory Drawing.*—Designed to sharpen the powers of observing and of remembering form (48).

(4) *Dictated Drawing.*—Designed to ensure accuracy of nomenclature, and to facilitate the teaching of drawing to scale (67).

(5) *Model Drawing.*—The Glass Plane is used to show practically the difference between the real and apparent form of an object (35). In the course of study straight-lined objects are taken first, as the door (17). Afterwards the circles (24) and the ellipses (50) show the effect of foreshortening on simple curves, and then (34) used with (35) shows the foreshortening of difficult curves on a flat surface. The boughs of trees (31, 33) afford good practice in foreshortening, and the large cast ostrich eggs, vegetable marrows and Spanish onions more difficult practice still. Class teaching of model 54.

(6) *Coloured Freehand.*—Colour, makes a copy interesting, intelligible, and easy to be seen. See the same outline coloured and uncoloured (11, 12). The connection between natural and conventional forms. Drawn by the members of a class of teachers engaged in studying methods of teaching (2, 3, 8, 10, 13, 65, 66). Shaded freehand, practice in laying a flat shade. Camel (39). Pressed leaves as freehand copies (21). Freehand copy made and coloured in twenty minutes (36). Class teaching of coloured freehand (53). Freehand copy drawn entirely with the brush (43).

(7) *Coloured Geometry.*—Interesting, and forms an introduction to coloured design and to the use of colour in making clear the different materials used in machine drawing and building construction (18).

(8) *Solid Geometry.*—The hinged black boards facilitate the explanation of its elementary principles (22, 52).

(9) *Shading.*—Set of Studies done in class in four hours, with teachers' class demonstration. Studies of students (41, 42, 68). Teachers' demonstration (40, 39). No. 29 executed by a boy of 16 after only 50 hours' practice. Class teaching of shading (19). The connection of shading with painting. The sepia is simply an exercise in manipulation after the shading is finished (27, 28).

(10) *Tone and Painting.*—Diagram to explain the meaning of tone (25). Studies of tone made from still-life groups, afterwards painted (30, 37, 46). Groups of objects to illustrate subtle and violent contrasts of tone. Great contrast (49). Subtle contrast in dark key (23). Subtle contrast in light key (51). *Groups of Water Colour.*—Three gold medals and two silver medals were obtained, in two years, in the National Competition of the Science and Art Department by students studying tone and painting as here illustrated. One student obtained the gold medal at the age of sixteen. His work was purchased by the Science and Art Department, and cannot be obtained for exhibition here.

(11) *Design.*—Worked in class on simple conditions, dictated by the teacher (44, 45).

(12) *Exercise of the Imagination.*—Illustrations drawn, without help from other illustrations or from a teacher, by a girl fourteen years of age (63).

1483. **REEVES & SONS, 113 Cheapside, E.C.**—Artists' Materials, for oil painting and water-colour drawing, as used by artists, amateurs, and in elementary instruction. Also all requisites for architects and engineers.

1484. **CUSSONS, GEORGE, Cheetham Hill, Manchester.**—Art Vases in wood (unbreakable) for drawing classes. These models are well adapted for ordinary use in elementary schools and art classes. They are carefully made out of dry selected hard wood. They are more durable and cheaper than the porcelain jars.

1485. **STANDAGE, H. C., Keppel Street Studio, S.W.**—(1) The Universal T Square, an instrument for the use of draughtsmen, which enables them to dispense with the employment of the ordinary T square. (2) Set Squares. (3) Parallel Ruler. (4) Protractor or Scale of Chords. (5) The Dividers and the Ordinary Measuring Rule.

1486. **GUNSTON, WILLIAM, 30 Tollington Place, Tollington Park, N.**—(1) Art Teaching, as applicable to schools. (2) Historical and other designs for frescoes, friezes, &c.

1487. **CHAPMAN & HALL, 11 Henrietta Street.**—Diagrams for Elementary Art Instruction as supplied to the Science and Art Department, South Kensington.

CHUBB & SONS' LOCK & SAFE CO., Limited, 128 Queen Victoria Street, E.C. (*See Class* 20.)

COALBROOKDALE CO., Limited (THE), Shropshire; & Holborn Viaduct. (*See Class* 24.)

COLLINS, WILLIAM, & CO., Limited, Glasgow. (*See Class* 51.)

GARCET et NISIUS, 76 Rue de Rennes, Paris (Agent, EMILE FOUCARD, 23 & 24 Hop Exchange, Southwark Street, S.E.). (*See Class* 48.)

HAMMER, GEORGE M., & CO., 370 Strand. (*See Class* 48.)

MYERS, A. N., & CO., 15 Berners Street, Oxford Street, W. (*See Class* 48.)

NORTH OF ENGLAND SCHOOL FURNISHING CO., Limited (THE), Darlington. (*See Class* 48.)

Class LIII.

Technical and Apprenticeship Schools.—(*a*) Apparatus and Examples used in Primary and Secondary Schools for teaching Handicrafts; (*b*) Models, Plans, and Designs for the Fitting up of Workshop and Industrial Schools; (*c*) Results of Industrial Work done in such Schools.

(*See Central Institution of the City and Guilds of London.*)

Class LIV.

(*Royal Albert Hall.*)

Schools for the Blind and for the Deaf and Dumb.—(*a*) Apparatus and Examples for Teaching; (*b*) Specimens of School Work.

MYERS, A. N., & CO., 15 Berners Street, Oxford Street, W. (*See Class* 48.)

ROTH, DR. M., 48 Wimpole Street, Cavendish Square, W. (*See Class* 39.)

Class LV.

(*Royal Albert Hall.*)

Literature, Statistics and Diagrams relating to Group 6 and to the Effects of "Cramming" and Overwork on the Young, &c.

FOHRING, DR. H., President of the I. Criminal Laws of Hamburg.—Treatise concerning the laws, plans, regulations and conditions of public and private schools for youthful offenders, and begging, wandering and destitute children of Hamburg, France, Belgium, Holland, Italy and Switzerland. (*See Library.*)

MILLER, S. A., Orange House, College Park, Lewisham, S.E.—(1) Some Thoughts on Education. (2) Hints on Method, in Detail. (*See Library.*)

PICK, PROFESSOR ADOLFO, Giardino d'infanzia Rialto, Venice.—Five Volumes of Works on Education. (*See Library.*)

Class LVI.

(*Royal Albert Hall.*)

Collective Displays of School Work and Appliances. School Museums.

1488. **SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE.**—The Society exhibits publications intended to familiarise the people with the laws of health. They embrace—(1) Popular Manuals, published at 1*s.* each, prepared by the late Professor Parkes, Professor de Chaumont, Dr. B. W. Richardson, Professor Noel Hartley, and Dr. Bernays. (2) Manuals on Thrift and Domestic Economy, by the Rev. W. Lewery Blackley and Dr. B. W. Richardson. (3) Diagrams to illustrate Elementary Physiology.

The following is a list of the Manuals exhibited:—*Manuals of Health.* A Set of Manuals for Household Use. Fcap. 8vo., limp cloth, 1*s.* each. "On Personal Care of Health;" by the late E. A. Parkes, M.D. "Food;" by Albert J. Bernays, Ph.D., F.C.S. "Water, Air, and Disinfectants;" by W. Noel Hartley, Esq., King's College. "Health and Occupation;" by B. W. Richardson, Esq., F.R.S., M.D. "The Habitation in Relation to Health;" by F. S. François de Chaumont, M.D., F.R.S. *The People's Library.* Crown 8vo., cloth boards, 1*s.* each. "Guild of Good Life (The), a Narrative of Domestic Health and Economy.;" by B. W. Richardson, M.D., F.S.S. "Thrift and Independence, a Word for Working Men;" by the Rev. W. Lewery Blackley, M.A.

1489. **RELIGIOUS TRACT SOCIETY, 56 Paternoster Row, E.C.**—Books and Pictures for Schools, and Educational Books.

Class LVII.

(*Royal Albert Hall.*)

Machinery and Appliances relating to Group 6.

1492. **WATERLOW & SONS, Limited, 25-27 Great Winchester Street.**—(1) Stylographic Pens. (2) Pencils. (3) Anderson's Patent Copying Apparatus and various other Copying Processes. (4) Waterlow's Patent Autographic Press.

THE EDISON ELECTRIC PEN & WRITING AGENCY, 52 & 53 Great Tower Street, E.C. (*See Machinery in Motion, Western Gallery.*)

CENTRAL INSTITUTION OF THE CITY AND GUILDS OF LONDON.

DIVISION II.—EDUCATION.

GROUP VI.—EDUCATIONAL WORKS AND APPLIANCES.

Class XLVII.

Crèches and Infant Schools.—(*a*) Apparatus and Fittings for Crèches and Infant Schools; (*b*) Games, Toys and Kindergarten Amusements; (*c*) Models and Appliances for Teaching; (*d*) Examples of School Work.

1500. THE BRITISH AND FOREIGN SCHOOL SOCIETY'S KINDERGARTEN EXHIBITION.—The "Kindergarten," or "Children's Garden," is the name given by Fröbel* to an institution, where, in fresh pure air, amid pleasant and beautiful objects, and under the care of an educated and loving woman, the child-nature may be gradually and harmoniously developed in its threefold relation to nature, man, and God, as a preparation for the education and discipline of the school. What a happy, well-ordered home, with all its quickening and developing influences is for the little ones of a refined and wealthy family, this the Kindergarten aims to be for those less fortunately circumstanced. Coming between the nursery (or the crêche) and the school, and providing interest, occupation, and cultivation for the children from three or four to six or seven, its object is to secure that inestimable blessing, a happy childhood. Its essential features, as shown or hinted at in this Exhibition, are bright and cheerful rooms, varied and suitable occupations, a trained teacher, and a right view of the individuality and possibilities of child-nature.

The outline of a room in which illustrated lessons and games will be given according to the following programme, may suffice to indicate the proportions which are most economical and convenient, and the furniture which is necessary. Several ground plans are exhibited on the outside of the screen, showing how the rooms may be grouped to make the most of site, aspect, &c. There should, if possible, be a room for each class, a central hall for the games, a garden with flower beds round the wall, and an open turfed or gravelled space for outdoor occupations and exercise. Each room should have as a minimum 100 cubic feet for each child. The light should fall from the left side or above. The walls should be so coloured as not to injure or weary the eyes. There should be a few pictures representing truthfully familiar animals, objects, and scenes. Plants and flowers should be used for decoration. To economise space the class room exhibited is also used for the games—the furniture being set aside and the piano, which should be in the hall, brought in.

Programme of Lessons and Games.

June	14.—Sticklaying ..	Miss Pattison.	Aug.	9.—Mat-plaiting ..	Miss Palmer.
„	21.—Gift IV.	Miss Pridham.	„	16.—Gift V.	Miss Pattison
„	28.—Paper-cutting .. (easy course)	Miss Nuth.	„	23.—	
			„	30.—	
			Sept.	6.—	
July	5.—Drawing	Mme. Michaelis	„	13.—Paper folding ..	Miss Reid.
„	12.—Modelling .. .. (blind children)		„	20.—Tablet-laying ..	Miss Pattison.
			„	27.—Gift IV.	Miss Franks.
„	19.—Modelling .. .	Mrs. Green.	Oct.	4.—Gift VI.	Miss Bolton.
„	26.—Pricking	Miss Wells.	„	11.—Painting	Mr. Cook.
Aug.	2.—Sewing	Miss Bolton.	„	18.—Paper folding ..	Miss Franks.

Diagram.—The diagram on the west wall will give a bird's-eye view of the Kindergarten system, showing the raw materials used for the occupations. These are simple and cheap, and therefore within reach of every child. They consist mainly of Wool, Wood, Paper, Clay, and

* Friderich Fröbel (born at Oberweissbach in 1782; died at Marienthal in 1852) finding by experience that no amount of effort or care afterwards could compensate for the waste or misdirection of the developing forces of a child's earlier years, devoted a large portion of his life to the elaboration of a system whereby, by a logical arrangement of occupations needing only simple and cheap material, and the free use of action-songs and gymnastic and imitative games, the various powers of body, mind, and heart may be successfully cultivated as a preparation for school-work. Fröbel was a pupil and disciple of Pestalozzi, and a student at the Universities of Göttingen and Berlin. Not only has his system been widely adopted in Germany, Switzerland, Italy, America, and England; its principles, and to some extent its methods have been incorporated in other systems; and, on the other hand, the name is used by many who have none of Fröbel's spirit, and only a caricature of his "Kindergarten" system.

Sand. A two-fold arrangement of the materials is attempted, viz. (1) in concentric bands, according to the average age of the children for whom the occupations are suitable; and (2) from the left to the right of the diagram, indicating the order in which the occupations should come—then dealing solids first, planes next, lines third, points fourth, and shapeless material last. Underneath the occupations is specified what is intended to be taught. Besides the training of eye, hand (especially fingers), and mind, which is sought in the occupations, the Kindergarten aims at the cultivation of other parts of the child nature, by means which are mentioned in the lower part of the diagram. These, like the occupations, have their explanation and justification in the central principle which is thus stated.

The Kindergarten recognises each child as an individual with a threefold relationship to God, man, and nature, to be dealt with according to its own individuality, laying hold especially of its reverence, affection, curiosity, imitativeness, emulation, love of activity, desire for useful and tangible results, in order to cultivate mental and moral qualities as well as to develop the limbs and organs of perception through communication and production.

On the outer rim of the diagram are the names of the qualities which it is the direct object of the Kindergarten training to develop.

The occupations may, with advantage, be carried on through and even beyond the school-life, though only shown as applicable to the Kindergarten proper (4 to 6) and the Transition class (6 to 7). They are *play* at first, and become *work* afterwards—hand-work and then head-work. Beginning with the concrete, the child makes his own discoveries by handling, counting, measuring, and transferring the material, invents his own designs, and thus gradually reaches a number of abstract ideas. He becomes familiar with things before he learns their names, thus making book learning easy and interesting when he comes to it, and laying the foundation of general intelligence.

In looking at the diagram it should be borne in mind that the principle is capable of almost indefinite application. The materials exhibited have been carefully chosen and arranged, in the belief that by their progressive use the development of the child may be most easily and surely accomplished. But mere occupation or desultory amusement with a set of toys or objects, however complete and well adapted, is not Kindergarten training. And, on the other hand, true teachers may invent new methods and apply the principle in new and original ways.

Exhibits.—The exhibits round the room (contributed by various teachers, and some the work of individual children, while others are the combined result of class-work) are arranged to show:—

I. The progressive nature of the exercises prescribed, e.g. the *Sewing on Card*, the *Map-plaiting*, and the *Drawing*, in each of which series the gradations are clearly exhibited

II. The way in which the various occupations may be made to prepare for and lead on to some of the items of school-work, such as Knowledge of the Alphabet, the Elementary operations of Arithmetic, Elementary Geometry, Natural History, History and Geography, Drawing, Design and Needlework. And

III. The way in which even children may produce, at a nominal cost and as the result of pleasant use of spare time, objects of symmetry and beauty for the decoration of their homes or for presents to their friends,—thus encouraging industry, quickening the love of what is beautiful, improving the taste, promoting friendly expressions of interest and regard, and putting the cultivation of generous impulses within reach of all.

The Exhibition is organised by the British and Foreign School Society (with the help of Fraülein Heerwart and others) in the hope that parents of all classes will be led to a new and more thorough idea of what education implies, and how it may be followed out in the house (or the Kindergarten) and the school; and that teachers of Public Elementary Schools will gain help in availing themselves of the new provisions* of the Code of the Education Department, so to prepare the little ones for school life, that the elements of a sound education may be obtained without any risk of over-pressure. (*Room No.* 12.)

The British and Foreign School Society has confined its exhibit to this one branch, to give as complete an illustration of the Kindergarten system as possible. The work of the Society, however, embraces the interests of all classes of Public Elementary Schools, and includes the maintenance of six Training Colleges, accommodating 515 resident students—190 male, and 325 female. Its distinctive features are *Undenominational Religious Instruction* and *Representative Management*, and these it has practically illustrated since its establishment in 1808. (*Room No.* 12.)

RAGGED SCHOOL UNION, Exeter Hall, W.C. (JOHN KIRK, Sec.)

(*See Class* 56, *Room No.* 13.)

* New Code, Art. 106, a. ii. "In order that this grant may be made, the scholars must be taught suitably to their age." Art. 106 b. "A merit grant if the Inspector reports the school or class to be fair, good, or excellent, allowing for the special circumstances of the case, and having regard to the provision made for (1) suitable instruction in the elementary subjects, (2) simple lessons on objects and on the phenomena of nature and of common life, and (3) appropriate and varied occupations."

Class XLVIII.

Primary Schools—(*a*) Apparatus and Fittings; (*b*) Models and Appliances for teaching; Text-books, Diagrams and Examples; (*c*) Specimens of Work in Elementary Schools.

1501. **THE NATIONAL SOCIETY.**—The National Society was founded in 1811 for "the Promotion of the Education of the Poor in the principles of the Established Church." No part of the Church's work is more important than that of imparting to the children of her poorer members a Christian education, and none has been more vigorously carried out since the beginning of the present century. There are at the present time 11,703 Church schools, affording accommodation for 2,413,676 children. In these schools there are in attendance each day on an average 1,562,507 children, or one half the whole number attending elementary schools throughout the country.

The Work of Seventy Years.—These figures, however, are far from giving an adequate impression of the efforts made by the Church in the work of education. From a careful investigation of the returns of the Education Department and of the National Society, it appears that the expenditure of the Church upon elementary education since the year 1811, when the National Society was founded, has been as follows:—

Voluntary Expenditure on Church Schools and Training Colleges.

	From 1811 to 1870.	Since 1870.	Total.
Schools:—	£	£	£
Building	*6,270,577	*5,489,256	*14,759,833
Maintenance . . .	8,500,000	7,220,180	15,720,180
Training Colleges:—			
Building	194,085	77,100	271,185
Maintenance . . .	185,276	190,673	375,949
	15,149,938	12,977,209	28,127,147

* These figures are exclusive of the value of sites, which are often given in the case of Voluntary Schools. This would increase the total expenditure by at least a million pounds.

Training Colleges.—The National Society from the first saw the necessity for training teachers who should be well informed in their professional duties, and competent to give to the children under their charge a sound religious and secular education. Great efforts have therefore been made in this direction, and no less than 30 training colleges have been established at a cost to the Church of more than £270,000. In these colleges, which are capable of accommodating 2,229 students, two-thirds of the whole number of trained teachers in the country have received their professional education. In addition to the original cost of establishment, the Church has expended £375,000 in maintaining these colleges, and an annual sum of £10,000 is at present provided by the Church for this purpose.

Diocesan Inspection.—The work of testing the religious instruction in Church schools, which was discharged by the State down to the year 1870, is now carried on by the Church itself. A large body of experienced inspectors, acting in each case under instructions from the Bishop of the diocese, are engaged upon the work. The maintenance of these inspectors involves the expenditure of not less than £15,000 a year on the part of the Diocesan Boards, whose funds are in many cases largely supplemented by the National Society.

Progress of Church Schools since the passing of the Education Act of 1870.—From the returns of the Education Department it appears that the Education Act of 1870 gave a great impetus to the establishment of church schools. The accommodation has increased from 1,365,080 to 2,413,676, and the average attendance from 844,334 to 1,562,507, so that in the last thirteen years more than 1,000,000 additional school places have been provided by the Church, and the average attendance has been nearly doubled. In the same period the number of certificated teachers in Church schools has increased from 9631 to 19,201.

School Fittings, Books and Apparatus.—More than thirty-seven years ago the National Society, being impressed with the importance of providing the most approved school books

and apparatus at the cheapest rates, established a depository. The sales in the depository, which were £3000 in 1846, amounted last year to £57,810.

During the past five years a large number of new books to meet the requirements both of schools and training colleges have been published. These works have been entrusted to writers of reputation who have practical experience as teachers as well as a special knowledge of the subjects on which they have to write. Some of these books, e.g., Miss Yonge's Historical Reading Books and the New National Reading Books have met with a sale which is perhaps unexampled in the annals of school book publishing. At the same time no efforts have been spared to provide desks and other school fittings of the most approved patterns and with the latest improvements. The Society's exhibit in room No. 46 of the Central Guilds Schools and the catalogue will best show the numerous publications issued by the Society for use in elementary schools and training colleges. It is necessary, however, to call special attention to some of the more recent publications. The following books are intended for the use of teachers and training colleges:—"Manuals on the Science and Art of Teaching," Locke's "Thoughts on Education," "The Grammar, History and Derivation of the English Language," "The Teacher's Manual of Mental Arithmetic," and "How to Prepare Notes of Lessons." For use in schools the following books have been issued:—English History Reading Books, Geography Reading Books, the New National Reading Books, Shakespeare's Historical Plays for Schools, annotated by Miss Yonge, Chapters in Popular Natural History by Sir John Lubbock, and Reading Books on Social and Political Economy, and on Botany. In the National Society's new series of wall maps, an attempt has been made to embody all the requisites necessary for a thoroughly practical set of schoolroom maps. They have been carefully prepared by an experienced teacher of geography, and they combine decided legibility of type with special clearness in representing the great physical and political features of each country. They are thus well suited for class teaching. They contain information of the latest date and from the most trustworthy sources. They show the chief places of historical interest, especially such as are likely to occur in reading books. They are not overcrowded with names. They are executed in the best style of the art of drawing and engraving. The price at which they are published is such as to bring them within the reach of all schools. The Society has also prepared a series of Religious Knowledge Manuals, adapted for religious instruction in day and Sunday schools. Whilst the society seeks to publish the best books in every department of school and college work, it collects the books of other publishers and supplies them to schools.

Voluntary Schools.—Whilst the Church has done so much for elementary education, the other religious bodies have not been idle. At the present time there is accommodation in Roman Catholic schools for 272,760 children, in Wesleyan schools for 200,564 children, and in British undenominational and other schools for 386,839. This makes a total of 860,163 school places provided by other religious bodies than the Church, and added to the number of places provided in Church schools gives a grand total of 3,273,839 school places in voluntary schools, or more than two-thirds of the whole school provision of the country.

The following statistics, which are taken from the returns of the Education Department, show the educational work done by the various religious bodies and by school boards since the passing of the Education Act of 1870 :—

Year	Accommodation				Average Attendance			
	Church	British, Wesleyan, &c.	Roman Catholic.	Board	Church	British, Wesleyan, &c.	Roman Catholic	Board
1870	1,365,080	411,948	101,556	—	844,334	241,989	66,066	—
1871	1,439,428	459,761	113,490	—	891,484	266,839	73,111	—
1872	1,606,621	531,518	140,599	17,156	950,813	296,464	80,155	8,726
1873	1,751,697	543,558	162,236	125,058	1,017,688	305,981	88,828	69,983
1874	1,889,236	557,883	179,199	245,508	1,117,461	322,633	100,372	138,293
1875	2,011,434	571,582	189,236	387,227	1,175,289	328,180	106,426	227,285
1876	2,105,849	563,566	200,753	556,150	1,217,619	327,914	110,969	328,071
1877	2,171,639	563,485	213,172	705,122	1,273,041	332,140	117,969	427,533
1878	2,252,794	572,882	226,497	890,164	1,368,029	351,785	126,305	559,078
1879	2,301,073	582,284	242,403	1,016,464	1,426 595	361,969	136,690	669,741
1880	2,327,379	582,600	248,140	1,082,634	1,471,615	364,420	145,629	769,252
1881	2,351,235	582,776	261,354	1,194,268	1,490,429	364,113	152,642	856,351
1882	2,385,374	584,969	269,231	1,298,746	1,538,408	370,602	160,910	945,231
1883	2,413,676	587,403	272,760	1,396,604	1,562,507	373,493	162,310	1,028,904

1502. CHURCH OF ENGLAND SUNDAY SCHOOL INSTITUTE, Serjeants' Inn, Fleet Street, London (JOHN PALMER, Secretary).—The Exhibits of this society are divided into two sections, representing—(1) A Model of a Sunday School building, with improved seating arrangements. (2) Sunday School Text Books and Apparatus.

SECTION I.—MODELS.

Under this heading the Exhibits consists of—(1) Model of a School.—Shows a room arranged for class and collective teaching, with improved seating arrangements. (2) Sunday School Class.—Shows the seats arranged for simultaneous teaching, mission or children's services. The model is composed of five dual forms, which would accommodate a class of ten pupils. The seats are hinged, can be quickly moved into one length, and utilized for other purposes. Backs can be supplied to the seats at a small cost. (3) The Teacher's Chair.—The special advantage of this chair is that it will put an end to one of the principal causes of confusion prevalent in many Sunday Schools. The seat forms a well, which is capable of holding all the books, &c., required by the teacher for the use of his class. Each chair is furnished with a spring lock.

SECTION II.—TEXT BOOKS AND APPARATUS.

The following is a complete list of books and apparatus required for placing a Sunday School in a state of efficiency. The subjects can also be graduated so as to be taught at the same time in each division of an ordinary Sunday School:—(1) Lesson notes for Teachers, graduated for infant, medium, and senior classes. The courses of lessons include the following:—The Old Testament, The Gospels, The Acts and The Epistles, Church Teaching, Church History, and Lessons for Infants. (2) Magazines for Teachers and Scholars, hymn books, manuals, services of song, school liturgies and services, catechisms, coloured pictures and cards. (3) Admission and Roll Books, class conduct registers, together with the usual certificates, cards, reports, &c., which form part of the essentials of a properly conducted Sunday School. (*Room No.* 13.)

1503. COMMITTEE OF THE MANCHESTER ART MUSEUM, MANCHESTER.—In all large English towns there are districts chiefly inhabited by the poorer classes of workpeople, who know very little of the beauty of nature, of art of any kind, of noble human action, passion, or thought. They never, or very rarely, see anything which is beautiful. In childhood they know nothing of birds and flowers, of trees and grass, and ferns. The revelations of the beauty and wonderfulness of the world, and of the great powers possessed by human beings, which art conveys to the more fortunate classes, hardly reach them at all. The evil caused by this kind of ignorance would be very great even if it were limited to the direct results of the deprivation of the kinds of knowledge which have most power to create wholesome feeling and thought. But the evil is not thus limited. The inhabitants of the districts in question not only do not see or know of those things which are best fitted to create wholesome thought and feeling, but have constantly before their eyes countless examples of many kinds of human degradation, of vice, crime, and hopeless misery, and of all that is foul and base in human thought and work. As the same relation between what is familiarly known and what is habitually felt and thought which exists for human beings elsewhere, exists for the people in the lowest parts of towns, and they have not the degree of independence of their immediate surroundings which education and travel give the well-to-do classes, it is obvious that if the level of their life is to be raised, they must be provided with the kinds of knowledge which are most productive of healthy feeling and thought.

As the subject of technical education is now receiving much attention, it may be well to point out in this connection that persons whose childhood has been passed in places where beauty is almost unknown, necessarily lack qualities which must be common if English commerce is to be prosperous—the qualities needed by good designers. These qualities are a keen sense of beauty of colour and form, and knowledge of the best ways of applying this beauty to purposes of decoration. Schools of Art and Museums can give knowledge of the best ways of applying beauty to decoration, but keen sense of beauty can, as a rule, be gained only in childhood, and can be gained then only by habitually seeing beautiful things.

The Committee of the Manchester Art Museum believe that by means of a small Art gallery in every crowded town district, and of small collections of works of art lent to the elementary day schools and Sunday schools in the district, much knowledge of the kinds most productive of healthy feeling and thought may be given. The collection of pictures which they exhibit partly illustrates the system which they have adopted in Manchester, where the Corporation have given them the management for two years of two rooms in the Queen's Park Art Gallery. This gallery will be opened by Mr. Mundella on July 5th. The collection exhibited contains examples of some of the classes of pictures which the committee lend to schools. Each school can have its collection replaced by another from time to time.

The school collections include engravings, photographs, and chromolithographs of such pretty places as town children see on the rare occasions when they are taken out of town—country lanes, woods, fields, farm yards, shipping and coast scenery—buildings and places and events which they read of in the Bible, and in their geographical and historical lesson books. The collections also include good coloured pictures of common wild and garden flowers, ferns, grasses, forest trees, common birds, moths, and butterflies. Pictures of fine action and passion, and any others which are likely to excite wholesome feeling or thought are also included. It is hoped that children who are led to look with attention at the pictures will, when they see any of the things represented, look at them with more interest, and that, having seen the things, they will then gain more pleasure from the pictures. It may be hoped also that familiarity with the pictures of flowers will tend to encourage the practice of growing plants at home. The Committee intend that the school collections shall eventually contain examples of casts of sculpture, pottery, textile fabrics, and other products of industrial arts—the pottery to consist chiefly of cups, jugs, and other things used in every house—but at present the collections consist only of pictures. Each picture lent is provided with a label containing a few words of explanation of the subject, and, when the picture is of low price, a statement of the price. Reference is made to books containing information about the subject when this can be done. The central Art Gallery contains a collection of all the appliances used in etching, wood engraving, chromolithography, and other art reproducing processes, and explanations of these processes. In the labels attached to the pictures lent to schools, the school children are referred to the collections and explanations in the central Gallery.

The Gallery contains, in addition to collections of products of most of the industrial arts, pictures of religious subjects, scenes from history, real or imaginary, portraits of well-known persons, scenes of social life, scenes of child life, pictures of well-known places, of beautiful scenery—amongst others, of scenery in the neighbourhood of Manchester; of trees, plants, and flowers, especially of those of the district round Manchester; of animals, &c., &c. Some of the pictures have been chosen as good examples of the kinds of art which many work-people could afford to buy. In all such cases the price is stated on a label. The gallery also contains a model small house, which has been furnished by Mr. W. Morris and Mr. W. A. S. Benson, and which, the Committee believe, will teach more convincingly than any lectures or books could do, that beautiful things can easily be obtained by thousands of persons whose houses at present contain nothing which they can admire. The Committee are convinced that the plan which they have adopted of connecting the small school collections with the larger collections in the Art Gallery will add greatly to the usefulness both of the gallery and of the school collections. (*Corridor, Second Floor.*)

1504. **THE SUNDAY SCHOOL UNION, 56 Old Bailey, London.** — This institution was established 81 years ago, its objects being—first, to stimulate and encourage Sunday-school teachers, at home and abroad, to greater exertions in the promotion of religious education; secondly, by mutual communication to improve the methods; of instruction thirdly, to ascertain those situations where Sunday-schools are most needed, and promote their establishment; fourthly, to supply the books and stationery suited for Sunday-schools at reduced prices. Not only does the Sunday School Union stimulate and encourage Sunday-school teachers at home and abroad to greater exertions in the promotion of religious education, but it seeks by mutual communication and by the Press to improve the methods of instruction. Having this end in view, the Sunday School Union has instituted examinations of teachers in scripture history and doctrine, the evidences, and the principles and art of teaching. It has also established normal and training classes. (*Room No.* 13.)

RAGGED SCHOOL UNION, Exeter Hall, W.C. (JOHN KIRK, Secretary). (*See Class* 56.)

Classes L. & LIII.

Handicraft Teaching in Schools for Boys.—(*a*) Apparatus and Fittings for Elementary Trade Teaching in Schools; (*b*) Specimens of School Work.

Technical and Apprenticeship Schools—(*a*) Apparatus and Examples used in Primary and Secondary Schools for teaching Handicrafts; (*b*) Models, Plans, and Designs for the Fitting up of Workshop and Industrial Schools; (*c*) Results of Industrial Work done in such Schools.

1505. **COACHMAKERS' COMPANY OF THE CITY OF LONDON.**—School Department.—Exhibits to illustrate the progress of Technical Education in the Carriage Trade. Results of Prizes offered by the Coachmakers' Company of the City of London, from 1872 to 1884, for Drawings of Carriages, and Freehand Drawings, and Essays. Results of the

St. Mark's Drawing and Technical Class, held in George Street, Grosvenor Square. Selections of five full-sized Drawings, a number of Carriage Working Drawings to inch scale, a series of Free-hand Drawings, a series of problems in Geometry worked out, and various technical questions with answers, all by working-men and youths in the Coach trade in London and other towns and cities of England. The art of drawing is taught and technical instruction is given in classes in two places in London; also in Manchester, Newcastle-on-Tyne, Worcester, Leamington, besides private studies in Warrington, Hull, and other places. The classes are held in the evening, two or three days a week during the winter months, and the instructors are qualified and superior mechanics in the Coach Trade, and for Freehand and Geometry qualified and certificated masters from South Kensington. Examinations are also held every year by the City and Guilds of London Institute, in technical questions, in May. The number of students is yearly increasing, and it is believed that several hundred youths and men were last winter under instruction. The specimens shown are very limited in number on account of the great space occupied by them. (*Corridor 2nd Floor.*)

1506. **INSTITUTE OF BRITISH CARRIAGE MANUFACTURERS.**—*Methods and results of Technical Education as applied to the art of the Carriage Manufacturer.*—For a long series of years the carriages made in London have had a world wide celebrity, and buyers from all parts of the world have come to London when requiring the finest specimens of the art. There were several reasons for this: the British nobility and gentry had inherited and cultivated a taste for good carriages and good horses—they took a pleasure in the practice of driving one, two, and four horses, encouraged excellence in the animals and the vehicles, the servants, the harness, the liveries, the roads—even the roadside inns. Besides this, King Charles II. granted a charter incorporating the Guild of Coachmakers of the City of London, whose duty it was to watch over the trade, to foster and develop it, to punish fraud and bad work with severity, to train apprentices, and in its political capacity to assist in choosing suitable men as Lord Mayors and Sheriffs, who should as heads of the great Corporation, keep the Masters, Wardens, Liverymen and Freemen, to their duties. As long as the members of the Guilds were restricted to men following the trades that gave the name and *raison d'être* to the company, all went well: a time came when other men having but a slight connection with the trade, or no connection whatever, were admitted to the Guilds as Liverymen, and these, by introducing in their turn similar uninterested men, at last virtually supplanted the trade members.

At the beginning of this century the London Coachmakers numbered among their body a group of men as inventors, mechanicians, and patentees, who still further raised the existing reputation of London carriages,—among them were Hatchett, Hobson, Collingridge, Barker, Cook, Hopkinson, and Elliott.

Hatchett and Hobson gave a style, proportion, and finish to their productions that had not before been reached: they were artist workmen and producers in the true sense of the word. Collingridge and Cook were under the immediate patronage of King George IV., who not only personally and frequently consulted with them, as to improvements in construction, style, and colour, but induced the nobles of his court to follow his example. This led to fame and wealth for the makers, and a large and profitable trade for many others, who saw and copied that which the king approved.

Elliott, about this time, invented the system of suspending carriages on elliptic springs without a perch—reducing the weight and cost, and creating a revolution and improvement in carriage construction that is adopted in all parts of the world where carriages are built.

About the same time Collingridge invented and patented the improved axles (to carry oil) that bear his name, and his system of axle construction is now universal.

Besides them were other men, not so much inventors or mechanicians, as men of enterprise, energy, and business capacity, who attracted trade to the metropolis.

The introduction of railways reduced the demand for carriages drawn by horses, and carriage builders had entirely to remodel their carriages and construction to meet altered conditions of locomotion.

The more recent introduction of tramways is again altering these conditions in two ways: first, by rendering the light wheels with narrow tyres unsafe for use in towns having tramways, by reason of their falling into the grooves and being wrenched to pieces; and, secondly, by enabling many business people to travel to and from their homes at less cost than in their own separate or private carriages.

Technical education has been encouraged by a few London and provincial houses, with a view to render the style and construction more perfect, and to give a theoretical as well as practical knowledge to the young men now in training for employers, managers, and workmen. Excellent carriage drawings had for many years been executed by employers and trained draftsmen, but the first steps towards theoretical training were taken by a joint committee of employers and workmen in 1864, who brought together a collection of working drawings, designs, models, and objects of interest as an Operative Coachmakers' Industrial Exhibition, held by the permission of the Coachmaker's Company in their civic hall.

It was opened (on February 1st, 1865) by the late Earl of Shelbourne and the late Dr.

Milman, Dean of St. Paul's, supported by the late Lord Torrington, Sir Henry Cole, Sir S. Tyler, Professor Bentley, Thomas Winkworth, Captain Fowke, R.E., W. Clode, G. T. Wilson.

In the years 1866–7 four practical carriage builders joined the Company, and soon began to make their voices heard in favour of rendering the Company a useful institution, and rousing it from its torpor. In the year 1867 a few small prizes were offered for drawings, and year by year, or as occasion offered, the amounts were augmented.

In the year 1874 the new master offered a prize of £20 for an essay or treatise on "Coach-Body-Making." His successor the next year offered a similar prize on "Carriage Making," and in succeeding years prizes were offered for essays on coach painting, coach trimming, the manufacture of carriage axles, springs, ironwork, and wheelwright's work.

In the year 1876 two members of the Company invited a number of employers and workmen to meet them with a view to found a class for teaching freehand, and carriage drawing to any one willing to learn. A teacher of freehand drawing was engaged; a small beginning was made, the two founders attending regularly with the students, and working side by side with them for several months.

The chairman of the committee of management of the St. Mark's class (as it had been called from meeting in the parish room attached to St. Mark's Church) commenced the teaching of technology by delivering a lecture to the class on October 1st, 1877, "On the Principles to be Observed in Designing Carriages," and in which he foretold that a good future was before the class, and that from among the students and others would arise teachers who would be able to give practical and theoretical teaching combined; this is the system and result as carried on now after an existence of eight years, and passing from two to three hundred students through the class, some of whom have attained great proficiency, and materially advanced their social as well as pecuniary position.

Similar classes have been established in Manchester, Newcastle-on-Tyne, and Worcester, all of which send specimens of the results of technical teaching.

A great impulse was given to the technological teaching by the foresight and suggestions of Col. Donnelly, who in 1872 induced the Society of Arts to examine candidates in the theory and practice of the trades they followed.

One feature of the work is to simplify the manufacture by the adoption of standard sizes for certain of the working mechanical portions that tend to an excessive complication and variety of practice, and lead to great delays and cost in repairs, and frequent inconvenience to employers in the excessive variety and multiplicity of patterns, creating waste, locking up capital, and enhancing cost without any corresponding advantage to either producer or purchaser.

Practical papers have been written and read before members of the Institute, foremen and workmen—"On the Advantages of Adopting Standard Sizes for Parts of Carriages;" "On a Carriage Builder's Tour in America;" "On Taxes on Carriages;" "On Carriage Building in America;" "On Coach Laces and Trimmings;" "On the Timbers used in Carriage Building;" "On Art Applied to Carriage Building." Others are promised, "On Carriages for Countries without Roads;" "On the Art of the Coachsmith;" and "On the Art of the Carriage Axle Makers."

Steps are being taken to ascertain the requirements of carriage purchasers in all parts of the world, as regards the width of road tracks, state of roads, climate and wants and habits, that have to be specially studied and provided for,

Statistics on various subjects connected with the manufacture have been compiled, have already been made use of and will probably be turned to useful and profitable account in the future.

The foundation of a library of reference has been made, and the Institute already possesses, by the courtesy of the Commissioners of Patents, copies of every patent relating to carriages dating back several centuries. These are bound and indexed, and are available for inventors and patentees.—(*Corridor 2nd Floor.*)

1507. ST. MARK'S TECHNICAL AND DRAWING CLASSES FOR COACH ARTISANS (THOMAS COWARD, Secretary), 33 George Street, Grosvenor Square. (1) Drawings of Carriages. (2) Perspective Drawings of Carriages. (3) Problems in Geometry, Plane and Solid. (4) Freehand Drawings. (5) Drawings of Parts of Carriages. (*Corridor 2nd Floor.*)

1508. McNAUGHT & SMITH (Technical Class), Worcester.—Scale Drawings of Carriages. (*Corridor 2nd Floor.*)

1509. MANCHESTER TECHNICAL SCHOOL (THE) (J. H. REYNOLDS, Secretary).—(1) Diagrams, Drawings, and Models illustrating instruction in building construction. (2) Apparatus illustrating instruction in geometry and botany. (*Room No.* 14.)

1510. OLDHAM SCHOOL OF SCIENCE AND ART (THE) (J. P. PHYTHIAN & J. ROBERTSON).—Machine Construction Sketches, upon black paper, 6 ft. by 4 ft., ruled in 3-in. squares, drawn in coloured chalks, representing materials used in construction. These

examples were worked in the presence of the students, explanation of principles given, and a quick insight into a number of mechanical arrangements obtained. The diagrams are also used in the applied mechanics and steam classes. The students follow line for line in reduced proportion. The copies can be subsequently worked out with mathematical instruments, and supplement the ordinary classwork of mechanical drawing from freehand outlines. The master's preparation is by sketches from the mechanical journals, &c. (*Room No.* 14.)

1511. **GILKES, GILBERT, & CO. (late WILLIAMSON BROS.), Kendal.**—Models of Machine Details prepared under the direction of the Science and Art Department, as Aids to Instruction in Machine Construction and Drawing, by Professor W. C. Unwin.

Models of Couplings or Shafts.—(1) Muff or Box Coupling; shafts without bosses at ends; sunk key-way; half-full size. (2) Half-lap coupling; shafts with bosses and neck half full size. (3) Flange Coupling, bolts sunk into flanges, to obviate danger of their seizing anything in revolving; a box-key is required to loosen the nuts; half-full size. (4) Pedestal with Cap, brass steps and wall plate. This model is cut by sectional planes to show how it would appear in sectional drawings; locking nuts on cap bolts; the wall-plate permits the adjustment of the pedestal laterally; it is adjusted vertically by packing up with hard wood between the pedestal and wall-plate; full-size. (The above model illustrates Diagram IV., No. 20.) (5) Part of Rim, one arm, and nave of spur-wheel; epicycloidal teeth; half-full size. (6) Part of Rim, one arm and nave of bevil wheel, and the same parts of the corresponding bevil pinion; half-full size. (7) Part of Mortice Spur-wheel. (Models 109–112 illustrate Diagram VII., No. 20.) (8) Cast-iron Crank and part of Shaft; the crank pin fixed by shrinking on and riveting; crank shaft with boss having key-way and neck; half-full size. (9) Solid Connecting Rod End; brasses adjusted by sliding wedge moved by screw; half-full size. (10) Forked Connecting Rod End, with straps, gibs, and cotters; part of piston-rod, with its cross-head; slide bars and slide blocks; model half-full size. (The above model illustrates Diagram X., No. 20.) (11) Model of Piston. (Illustrates Diagram XIII., No. 20.) (12) Air Pump Valve, brass gratings, brass guard and india-rubber valve; half-full size. (Illustrates Diagram XV., No. 20.). (13) Gland Steam Cock; cut by planes of section to show internal construction; full size. (Illustrates Diagram XVI., No. 2 c.) (*Room No.* 14.)

1512. **CHANNON, JOHN, 18, Newland Street, Pimlico, S.W.**—(1) A brick finial of Renaissance design. (2) Working drawings of the same. No. 1 Sheet of drawings represents the full amount of detail which would be sent from the architect's office. It will be seen that to execute this in brickwork, is a task requiring some amount of thought as well as handicraft skill, and that in order to obtain a proper completion of work of this description it is absolutely necessary that the workman and foreman should both be practical men, and also have a thorough knowledge of drawing; indeed it would be impossible to execute the work properly without a further workshop drawing, as shown on No. 2 Sheet; it is here the practical man makes allowance in his material for that amount of waste which must occur in detail work, and practice alone can supply this information. The plan of the base, Sheet No. 2, gives the bond and true size of each brick in the first three courses. It will be also observed the bond throughout is the same as in a brick wall (the sizes of bricks are gauged to the work), the vertical joints being properly bonded. The plan of consols, Sheet No. 2, shows the bond and true shape of bricks as cut in the first instance, with sufficient material to allow the working of section of consols, and sinking the face as shown at "Half Plan, A A" and "True description of Consols," Sheet No. 1. In arranging the horizontal joints care must be taken not to injure the appearance of the design, therefore the thickness of each course must depend on the section of the work, the object being to suit the eye, and for this reason, where possible, the distances measured on the section of the moulding between each horizontal joint should be equal, otherwise the courses will appear different in thickness. Figures 1, 2, 3 and 4 show the plan and bond of each course as numbered, red lines in all cases indicating joints. The section of each course can be obtained from No. 1 Sheet. If necessary, the finial can be taken into three parts, in order to see that the plan of bond corresponds with the drawings. (There are no joints at B and C; see No. 1 Sheet.) The joints of ordinary gauged brickwork are made with putty lime, which answers very well when the bricks are bonded with, and well grouted in, the wall; but when the work (as in this case) depends on its own joints, or if for carving, dry white lead, properly mixed with shellac dissolved in naphtha, will combine the bricks as one solid block. Joints made in this way cannot be broken without crushing the whole. This kind of brick, although soft, and therefore cheap to work, hardens by the weather, and consequently is adapted for external decoration. Work executed on this system is much less costly than bad work. As a rule, bad work is the result of a want of system, rather than haste. With these drawings no brick need be cut wrong nor fitted twice, the time taken to set them out in the workshop is small compared to the inevitable waste of time and material without them. It is to be hoped the time is not far distant when all artisans will obtain that kind of instruction which will enable them to execute their work on scientific principles. (*Room No.* 14).

1513. **L. FRANKS, 1 & 2 Hutchison Street, Aldgate, E.C.**—The importance of handicraft work as a stimulus in the education of youth has long been recognised. Already many institutions on the continent of Europe have accomplished the most brilliant results. Notably those in North and South Germany, Austria, Hungary, &c., and especially the Deaf and Dumb Institute at Metz, at all of which instruction is given in the art of fret cutting by hand. It is useful, ornamental and instructive, easy to work and most effective in its results, as proved by the articles exhibited. (*Room No.* 14.)

1514. **THE SHEFFIELD SCHOOL BOARD CENTRAL SCHOOLS.**—*Examples of Technical Work at the Central Higher School of the Sheffield School Board.* These Exhibits are intended to illustrate the Technical Instruction given in the Sheffield School Board's Central Higher Schools, referred to in the Report of the Royal Commission. Pupils are admitted to these schools only on passing an entrance examination, and the majority of those now under instruction are drawn from the upper classes of ordinary public elementary schools. The course of study is framed with the view of preparing young people for useful careers, either in connection with the industries of the district or in Educational Work. All the pupils take the ordinary code subjects together with some of the specified subjects. Both boys and girls throughout the school are taught French; some of the upper classes take German, and a few Latin. The girls also take needlework and practical cookery.

Science Course (*Boys*).—Practical, plane, and solid geometry; machine construction and drawing; mathematics; mechanics; chemistry, theoretical and practical; magnetism and electricity. (*Girls*): Chemistry, theoretical and practical, magnetism and electricity, animal physiology, hygiene.

Art Course.—Freehand, model, perspective, and geometry; drawing from the cast, modelling in clay.

Practical Work in the Workshop.—The production of simple, but perfect geometrical forms in iron and wood, such as the cube, hexagonal prism, &c., to teach accuracy of work, and skill in the use of tools. The construction of models in wood suitable for use in schools as examples for model drawing; also of various kinds of wood joints, model doors, &c. The construction of simple apparatus to illustrate by actual experiment the principles of levers, of levers in combination, pulleys, wheel and axle, the crane, strains on beams with different positions of load. The mechanics of the roof, arch, bridge.

In the above course an attempt has been made to solve the problem of providing the proper connection between the theoretical instruction of the class room and the practical instruction of the workshop. Hitherto the practical work has been carried on among the boys of the senior class only, and the tools and materials used have been supplied by the manufacturers of Sheffield as gifts to the school. The specimens of work exhibited consist (1) Of Wood and Iron Work made by boys whose ages range from 12 to 16 years; and (2) Of Mechanical Drawings made by the scholars of the Day School, or by those who have passed through the Day School, and are now continuing their studies in the Board's Evening Classes. There are also drawings which have been made by young artizans attending the evening classes.

The Workshop Exercises have been arranged so as to give the pupils a really useful training in careful and accurate workmanship. The chief aim is instruction and not recreation. After the pupils can fairly well make some of the more important wood joints, mortise and tenon, dovetailing, &c., they are encouraged to make useful articles of various descriptions. Some attempt has been made to teach the elements of roof construction. The iron work exercises afford a good training in the use of the hammer, chisel, and file. The blocks with square edges have been cut from rough irregular pieces of wrought iron, and the boys have endeavoured to make the faces square and true by the aid of the steel square and straight edge. The nuts have been filed and made hexagon by the aid of the gauge. The geometrical solids (octahedra, &c.) have been filed up from castings. Other exercises are intended to be added from time to time, such as simple wrought iron model gates, screens, &c., to illustrate the welding, bending, and riveting of iron. It is not intended to teach any special trade; but the samples of work serve to show what can be done by young boys after a few months' training, spending 3 or 4 hours per week at the bench. This work coupled with the mechanical drawing taught in the school has had a considerable influence on the tastes and aims of the pupils. They are nearly all anxious to learn some trade, and seldom offer themselves for clerkships.

The Mechanical Drawing Exercises, usually worked by the pupils, are based upon the syllabus for Machine Construction and Drawing issued by the Science and Art Department. The time spent on this subject is 2¾ hours per week, about one half of which is devoted to actual drawing with instruments, &c., and the remainder to taking notes of lessons on the strength and properties of materials, discussion as to the uses of various kinds of fastenings, the parts of machines, mechanical motions, &c. This course is also supplemented by the instruction arising out of the connection established in the school between workshop and class-room. The joints, iron models, roofs, cranes, &c., made at the bench are illustrated and discussed in the class-room while the working sketches are being made, and some finished drawings of such workshop exercises are included in the exhibits. The roof diagrams contain complete working drawings with all the important details of their construction taken out and enlarged for the

help of the workmen who may have to work from such drawings. Some elementary instruction has also been given in graphic statics for the determination of the stresses on struts, tie rods &c. Some of the best work exhibited from the evening class in this school has been done by students who were formerly pupils of the day department, and who are continuing their studies in the evening classes.

Mr. A. Newell is Principal of the School, and the work here exhibited has been carried out under the direction of Mr. W. Ripper, Assoc. Institute Mech. Eng., who is the science master of the day school and the organising master of the evening classes and Technical Department. (*Room No.* 14.)

1515. **ALLAN GLEN'S INSTITUTION, Glasgow.**—The aim of the Allan Glen's Institution is to supply a sound general education in English, Mathematics, Latin, French, German, Drawing, and the elements of Physics and Chemistry, with a special additional course of instruction for two years in purely technical subjects. The latter consist of:—Mathematics, Theoretical and Applied Mechanics, Steam and the Steam-Engine, Practical Solid Geometry, Machine Construction and Drawing, Inorganic Chemistry. All the instruction is made as practical as possible by means of exercises in the workshop and laboratory. No attempt, however, is made to teach a trade in the Institution. The object rather is to prepare boys to learn trades whose mastery implies a considerable amount of scientific knowledge. Pupils are not admitted to the laboratory and workshop till they reach the highest class of the Secondary Department of the Institution and have begun the studies to which their attention is afterwards to be confined in the Technical Department. The Drawings, Models and other articles now exhibited are a portion of those made by pupils during the last four years. All the models have been made from working drawings.

Specimens of School Work.

A. *Models of Machines and Machine Parts.*—(1) Sectional Model of Steam Engine. (2) Sectional Model of Marine Boiler. (3*a*) Model of Open Safety Valve. (3*b*) Model of Closed Safety Valve. (4) Model of Footstep. (5) Models of Shaft Couplings, various. (6) Model of Crank Disc. (7) Model of Flanged Pulley. (8) Model of Wall Bracket. (9) Model of Riveted Joints, various. (10) Model of Portion of Wrought Iron Girder. (11) Model of Corner of Cast Iron Tank. (12) Model of Corner of Wrought Iron Tank. (13) Model of Cast Iron Crank. (14) Model of Slide Valve. (15) Model of Connecting-rod End. (16) Model of Knuckle Joint. (17) Model of Joint in Carpentry. (18) Model of Camb Motions, two. (19) Set of Patterns and Castings for Model of Oldham's Coupling. (20) Model of India-rubber Flap Valve. (21) Sheet Iron Model of Water Wheel. (22) Three Surface Plates, made without Standard. (23) Pattern of Frame for Double-purchase Crab.

B. *Patterns and Castings of Steam-Engine for School Workshop.*—(24) Sole Plate. (25) Pillow Block for Crank Shaft. (26) Crank Discs. (27) Crank Shaft.

C. *Models for teaching Drawing and Solid Geometry.*—(28) Various.

D. *Mechanical Drawings and Designs.*—(29) Isometric Projection from measurement of the Chemical Laboratory of the Institution. (30) Working Drawings of Steam Engine designed by pupils for School Workshop, various. (31) Drawings from rough dimensioned Sketches, and from measurement, various. (*Room No.* 14.)

1516. **JAMES RIGG, 11 Queen Victoria Street, London, E.C.**—*Subject I., Practical, Plane, and Solid Geometry.*—(1) Large Wooden Compasses, for black board use, with crayon holder and improved joint. (2) Universal Model Holder of metal. (3) Mensuration Board for class or lecture-room teaching. (4) The Binomial Cube, in a box, to show by experiment that $(a + b)^3 = a^2 + 2ab + b^2 (a + b) = a^3 + 3a^2 b + 3ab^2 + b^3$. *Subject II., Machine Construction and Drawing.*—(5) Combined Lap and Butt Joint. This joint has recently come into use in locomotive boiler construction. (6) Single Riveted Lap Joint, Rivets with common snap heads, showing their diameter and pitch and the overlap of the plates. Made of wrought-iron. (7) Double Riveted Lap Joint: less metal being punched out in the line along which the plate tears, and the shearing area of the rivets being proportionately increased, this is a stronger joint than the last one. (8) Twelve Forms of Bolts, in iron. (9) Four Cast-Iron Plates, in one plane, connected by flanges and bolts, with chipping strips so placed that the joints can be caulked with cement from the inside. (10) Similar Model, showing arrangement of plates of a tank having outside flanges caulked with cement from the inside. (11) Junction of Cast-Iron Plates by means of bolts and flanges, corner junction of three plates with outside flanges. (12) Corner of a Cast-Iron Tank, as used for supplying locomotives at stations, and consisting of six pieces, inside flanges and space for cement. Quarter usual size. (13) Knuckle Joint. This model is of much value in giving the correct strength for an arrangement so much used. (14) Proportions of Cotters. Model explaining the method and proportion of cotters for uniting shafts and resisting shearing strain. (15) Gib and Cotters used for connecting strap-shaped parts. (16) Hydraulic Joint, as used in Sir W. G. Armstrong's accumulator pipes. (17) Wrought-iron Crank Shaft. (18) Half Lap Coupling, with bosses and necks. (19) Box Coupling, with parts of shafts and key. (20) Flange Coupling, partly

in section, with turned bolts and nuts. (21) Disengaging Coupling or Clutch and Portions of Shaft. (22) Wall Plate, with pedestal, partly in section and steps complete. (23) Wall Plate and Bracket, for shafting. (24) Bracket Bearing, to receive a pedestal. (25) Hanger Pedestal, used for carrying shafting from ceiling joists. (26) Wall Box, for supporting pedestals. (27) Footstep Bearing, for supporting vertical shafts. (28) Stepped Speed Cone, for 3 speeds. (29) Ordinary Strap Pulley, having arms of elliptical section. (30) Model, in wood, of a wrought-iron hook and swivel, suitable for a six-ton crane, full size. (31) Model, in hardwood, of a wrought-iron hook, suitable for a two-ton crane; to be attached direct to a chain full size. (32) Plate Link Chain, used for working heavy loads. (33) Ordinary Straight Hand Lever, for working machinery. (34) Ordinary Straight Treadle Lever. (35) Winch Handle, or Cranked Lever. (36) Wrought-iron Crank, Crank Pin, and Shaft Journal. (37) Cast-iron Crank and Crank Pin. (38) Disc Crank and Pin. (39) Cast-iron Eccentric, in halves, with brass-flanged strap and connecting rod end. (40) Strap Connecting Rod End. (41) Box Connecting Rod End, dispensing with loose strap. (42) Coupling Rod Joint, arranged to diminish friction and wear. (43) Forked Connecting Rod End, Piston Rod and Cross Head, with straps, gib, and cotter. (44) Wrought-iron Slide Bars, with Cross Head, having wearing faces. (45) Piston, with junk ring and wedge spring ring; and part of Piston Rod, with collar and keys. (46) Cylinder Cover, Gland and Stuffing Box, partly in section. (47) India-Rubber Disc Air Pump Valve, brass grating and guard. (48) Lift or Puppet Valve. (49) Engine Slide Valve, with portion of valve rod. (50) Sectional 1½-in. Gas Plug Tap, in wood, flanged. (51) Sectional 1½-in. Solid Bottom Tap, in wood and brass, with gland and bolts, flanges turned. *Subject III.—Building Construction.*—(52) Model of a King Post, suited to a span of 20 feet. (53) Model of a Six-Inch Trussed Partition. (54) Model of a Trussed Timber Beam for Traveller. (55) Model, in hardwood, of a portion of a Box Girder for a traveller for thirty-ton crane, showing bridge rail, one-eighth full size. (56) Model, in wood, of parts of an iron roof Principal, including cast iron shoe; Main wrought-iron Tie Rod, with cotter and ragged holding down bolts, also diagonal and vertical struts and ties. *Subject VI.—Theoretical Mechanics.*—The following have been prepared from Models made under the direction of the late Professor Robert Willis, M.A., F.R.S., at the request of the Science and Art Department. (57) A Set of Mechanical Powers, also adapted for the illustration of other principles of Statics. (58) Lever. (59) Wheel and Axle. (60) Pulleys. (61) Inclined Plane, Graduated Plane, with variable sides. (62) Wedge. Wooden frame and two wedges. (63) Screw. (64) Parallelogram of forces. (65) Model to illustrate the action of "skew bevils," for communicating motion between axes whose directions neither meet nor are parallel. (66) Set of three Eccentric and Elliptic Toothed Wheels. (67) Mangle Wheel, reciprocating motion. (68) Reciprocating Motion, by a double rack and segmental teeth. (69) Two Spur Wheels, of wood, with teeth of the epicycloidal form and of large size, prepared with surfaces, showing the nature and direction of transmitted pressure during their sliding contact, and all the circumstances of their mutual action, the varying position of the points of contact with reference to the line of centres and pitch circles, &c., &c. (70) Model of a Conical Toothed Wheel and Toothed Cone, to produce a rotation with varying velocity, upon Roemer's principle. (71) Worm Wheel and Worm, on Hindley's principle, having many teeth in contact. (72) Eccentric Pin and Slit Bar, with discs, to produce rotary or oscillatory motions, by sliding contact. (73) Continuous Slow Motion, which may be used for counting the number of revolutions of a shaft, and consisting of a pin and plate, with semicircular teeth. (74) Boiler Punch, showing how, by a properly constructed cam, the greatest power of the machinery may be applied in the act of punching. (75) Screw, returning into itself; used for the uniform and alternate traverse of a rod, for such purposes as laying the thread on the bobbin in spinning. (76) The Quick Return Motion, derived from No. 72; as used in Whitworth's shaping machine and other tools, all the motion parts being shown. (77) Reciprocating Motion, by a triple tooth rack; this was used about the year 1690. (78) Model, to illustrate various conditions of wrapping contact or endless band motions. By this apparatus may be explained the use of a weighted or spring-stretching pulley. (79) Intermittent Motion, by hoop and pin wheel, showing a method by which machinery may be locked or fixed except at the instant of motion. (80) The Principle of Calculating Machines, illustrated by a working model, for addition and subtraction to three places of figures, as an example of ratchet works the method is that adopted for stamping progressive numbers on railway tickets or paying books. (81) Transmission of Axial Motion, by means of a face-plate with cross grooves, contrived about 1841; name of inventor unknown. (82) Link-work, connecting two parallel axes with side rods, employed for connecting the wheels of locomotive engines. (83) Link-work, to show Boehm's motion, by which three straight bars and two face plates are employed to communicate equable rotation from one shaft to another, parallel thereto. (84) Rotary or Oscillatory Motions, with varying velocities, produced by link-work in iron, with discs. (85) Motions, illustrating the action of the pedal of the harp (as an example of link-work), showing how flat, natural, or sharp note are obtained by the continuous depression of the same pedal. (86) Oscillations, multiplied by an arrangement of straight links connected with a common crank. (87) Alternate Intermittent Motion, produced

by link-work from a single axis of rotation. (88) Silent click, showing the method of avoiding the noise and consequent wear of the clicks in ratchet work. (89) Variable link work, showing a mode by which the path of a reciprocating piece may be increased or diminished, or entirely suspended, without altering or stopping the prime mover. (90) Combination of Hook's joints in iron showing the effect of different inclinations of the axes, and supplying means for observing the relative velocities in each portion of the rotation. (91) A set of apparatus to demonstrate and illustrate the construction, pressures, and tensions of the three legs or triangle, shears and derrick, also to show the amount of pressure distributed by a given weight upon each of the three legs of a table. (92) Selection from a complete set of mechanical apparatus for building up Experimental Machinery upon the plan described by the late Professor Willis in his 'System of Apparatus for the use of Lecturers and Experimenters in Mechanical Philosophy,' published by Weale, and largely illustrated by Professor R. S. Ball, LL.D., F.R.S., in his 'Experimental Mechanics,' published by Macmillan & Co., 1871. This apparatus is strong; and actual machines of all descriptions, as clocks, mangles, cranes, &c., may be constructed of the parts, the latter being the combination exhibited. *Subject VII.—Applied Mechanics.*—(93) Sectional wooden model diagram of a corn-thrashing machine, with beaters, strawshaker, riddle, &c. (94) Sectional wooden model diagram of a winnowing machine for separating chaff, small seeds, and small grain from large grain. (95) Sectional wooden model diagram of a corn mill, including every process from the grain being put into the hopper to its being deposited in sacks as fine flour, seconds, or bran. (96) Sectional wooden model diagram of a pump. (97) Sectional wooden model diagram of gas meter, size 1 ft. 4 in. by 1 ft. (98) Sectional wooden model diagram of a door lock and key, showing the mode in which the various parts are arranged. (99) Working model of the action of a pianoforte, size 1 ft. 9 in. by 1 ft. 3 in. *Subject XXII.—Steam.*—(100) Model of Bourdon's steam gauge. (101) Sectional Model of an express locomotive engine showing internal and external construction of boiler with tubes, smoke box, furnace, funnel, dome and safety valves, steam and exhaust passages with rods and handles, size 4 ft. 2 in. by 2 ft. 9in. (102) Sectional wooden model diagram of steam engine which can be placed before a class either as a horizontal, vertical, marine or locomotive engine. (103) Working illustration of link motion and reversing gear. (104) Sectional wooden model of compound steam engine, showing steam chests, valves, and steam pipe connections, and the manner in which steam enters the high pressure cylinder, and passes to the low pressure cylinder, and thence to the exhaust, size 2 ft. 6 in. by 1 ft. 3 in. (105) Sectional model of steam whistle alarm with lever bracket valve and float fixed on a portion of boiler shell. 106 to 110 illustrations of parallel motions for various descriptions of engines. (*Room No.* 14).

1517. **NATIONAL INDUSTRIAL HOME FOR CRIPPLED BOYS (THE), (FRED. JOHN BOVIS, Resident Secretary), Wright's Lane, Kensington, W.**—The case exhibited by the above Institution contains a variety of specimens of work executed by the boys in the four trades' departments, viz. carpentering, relief stamping and copper plate printing, saddlery and harness work, and tailoring. Each workshop is supervised by a competent master, who instructs the boys in the handicrafts mentioned for seven hours daily. The boys, who vary in age from 12 to 18 years, choose one of these trades on entering the Home, and follow it for a term of three years, so that on leaving they can take situations as assistants or improvers, and thus are enabled to gain their own living. Hitherto the boys have been very successful in after life. The Home is national, and is the only one of the kind for crippled boys in the kingdom. It was established in 1865, and the Earl of Shaftesbury is the President. The public can further the objects of the Home by giving orders to the respective trades' departments, as by this means the boys are instructed and encouraged to aid in their own maintenance. Visitors are cordially invited to call at the Home and see the work carried on any day from 10 A.M. to 5 P.M. (Saturdays and Sundays excepted). (*Room No.* 14.)

1518. **ST. JOHN'S INDUSTRIAL SCHOOLS, Parsonstown, Ireland.**—Specimens of mosaic, needlework, &c.

1519. **SCHOOL OF ART WOOD-CARVING, Royal Albert Hall, Kensington, S.W., in connection with the City and Guilds of London Institute for the Advancement of Technical Teaching.**—*Committee of Management.*—Colonel J. F. D. Donnelly, R.E., Chairman; The Right Hon. the Earl of Wharncliffe, Sir Coutts Lindsay, Bart., G. Aitchison, Esq., A.R.A., T. Armstrong, Esq., W. Chapman, Esq., J. H. Donaldson, Esq., R. W. Edis, Esq., F.S.A., G. Plucknett, Esq., J. H. Pollen, Esq., M.A., E. J. Poynter, Esq., R.A., J. Richards, Esq., E. C. Robins, Esq., W. P. Sawyer, Esq., J. Sparkes, Esq., H. T. Wood, Esq., Owen Roberts, Esq.; Treasurer and Hon. Secretary, T. Healey, Esq.; Manager, Miss Rowe, Instructors, Messrs. W. T. Ross and W. H. Grimwood. The above school has been established with a view of encouraging the art of wood-carving in this country as a branch of the fine arts. Both day and evening classes are held in the School. The day classes are held from 10 to 5 on five days a week, and from 10 to 1 on Saturdays. The evening classes are held from 7 to 9 on four evenings a week, viz., Monday, Tuesday, Thursday, and Friday. The fees for day students are £2 a month, or £5 a quarter. The fees for evening students are 15*s.* a month, or £2 a quarter. These fees may be paid either at the Ticket Office, Royal Albert Hall, between the hours of

10 A.M. and 5 P.M., or by P.O. Order addressed to the Hon. Secretary at the School, and payable at the Branch Office, Exhibition Road, South Kensington. There are at present twelve free student, ships in the school, viz. six in the day classes and six in the evening classes, the fees for which are paid from funds supplied by the City and Guilds of London Institute for the advancement of Technical Education. The holders of these studentships are selected by the committee of the school from persons of the industrial class who are intending to earn their living by wood carving. Candidates must have passed the 2nd grade art examination of the Science and Art Department in freehand drawing at least. Those who have some knowledge of wood carving, or have passed in the other subjects of the 2nd grade art certificate, or in drawing from the antique and the figure, architectural drawing or designing, or in modelling, will be preferred. Applications for these studentships should be addressed to the Hon. Secretary at the School. The principal aim of this School is to cultivate the production of wood-carving in a broad style, and at a moderate rate, similar to that used so largely for decorative purposes in the 18th century in England, and the Committee would gladly co-operate with any architects for this purpose. Orders for wood carving are undertaken at the School and the students have just finished two carved lunettes for the architraves or over-doors of Lord Wharncliffe's billiard-room at Wortley Hall. A photograph of one of these will be found among the exhibits as well as a photograph of a carved oak mantel-piece executed in 1881 for the Drapers' Company. To meet a want largely felt in the country, a system of teaching by correspondence has been arranged by Miss Rowe (Manager) from the instruction given at the school by Signor Bulletti, who from 1879 to 1883 was instructor to the school. Each lesson includes a carved example, a block for copying the same, with diagram and instructions how to set to work. Examples may be seen in the Educational Case, No. 3. Terms £2 2s. a set of five lessons, 10s. 6d. a single lesson. Classes have also been started at Grassmere, Horsham, Pulborough and Ellesmere, and in Ireland at Dublin and Cork, by students who have been trained at the school.

The following is a list of the principal exhibits:—(1) Carved Piano Back, in Italian walnut. Panels and frieze designed by John Page. Centre panel designed by Maria E. Reeks. Panels and frieze carved by Mary S. Smith (age 20), and who joined the school in Nov. 1883. Capitals carved by M. E. Reeks. (2) A Small Cabinet in pearwood and American walnut, designed by W. Benson, Esq. Designs for panels and drawers by H. Sumner, Esq. The carving executed by Joseph Jounaux, Jennie C. Holt, Edward D. Lodge, Charles H. Walton. (3) Educational Case. A series of progressive lessons for the teaching of wood-carving as used in the school as well as for the lessons by correspondence. Arranged by Eleanor Rowe (manager); the example executed by the students, and the diagrams drawn by Margaret Reeks. (4) A Carved Walnut Panel of a child with birds and foliage. Executed by Maria E. Reeks, now assistant-teacher in the evening class. (5) A Carved Italian Pilaster in pearwood, by William Paige (age 19). (6) A Carved Griffin Panel in American walnut, by George Hurst (age 15). Joined the school in March, 1883. (7) A Gothic Panel in chestnut, executed by Louisa Spicer, for three months a pupil in the school. (8) A Gothic Panel in chestnut, executed by W. Beale. Joined the school in October, 1883. (Evening class.) (9) A Carved Panel in Italian walnut, by Donald Chisholm. Joined in May, 1883. (Evening class.) (10) A Carved Panel in American walnut, by A. Roberts. Joined in September, 1883. (Evening class.) (11) 18th century English Moulding for over door, executed by J. Jounaux. (12) Mouldings and Minor Panels. Further work of the School may be seen in the Art School section, arranged by the Science and Art Department in the International Health Exhibition. (*Room No.* 14.)

1520. **CLERKENWELL TECHNICAL DRAWING SCHOOL.**—The drawings for technical purposes should not be criticised by art connoisseurs, because they are only the ideas of workmen employed in one or the other trade, and if they fulfil what is wanted of them they are good. Such a drawing must show a correct outline of the article which it is to represent, and also the outlines of the ornaments, so that modeller, chaser or engraver is enabled to work, without guessing at the meaning of the designer, who is never asked to produce a picture. If he should do something in shading, in a Rembrandt style, his drawing would be useless in the workshop. The twelve drawings sent from the Clerkenwell Technical Drawing School, established by the Goldsmiths' Company for silversmiths, chasers and engravers, have little appearance of technical drawings, but everybody will observe that ornament, as the alphabet of every trade, forms the greater number of them, and that they are finished with great knowledge and care. The outlines are invented by the master of that Institution, and the students therefore had no copies, and were left to their own resources and forced to think for themselves. Also it will be observed that these drawings are shaded in one and the same way. The light falls from the left-hand side upper corner down to the right-hand side lower corner, and when the students have practised this for some time, they finish with greatest ease a good drawing, and have not to seek the help of a copy.—(*Corridor 2nd Floor.*)

1521. **RANVIER, JULES, 116 Rue de Turenne, Paris.**—Drawing Models in Zinc, largely used in the Higher Schools, Lycées and Colleges of France instead of plaster:—1. Collection of seven simple geometrical solids. 2. Collection of seven interpenetrative geometrical solids. 3. Collection of eight panels in two planes. 4. Series of thirteen examples of architectural, and other ornament, Gothic, Renaissance, &c. (*Room No.* 14.)

1522. **UNIVERSITY COLLEGE, LONDON (ENGINEERING DEPARTMENT).** University College, London, founded in 1828, very early recognised that applied science should take a place in its curricula, and the late Mr. Charles Blacker Vignoles (President, Inst. C.E.), was appointed in 1830 its first Professor of Engineering. Of late years it has very greatly extended its work in this direction, and has formed a Department of Applied Science and Technology, intended specially to provide systematic training for students wishing to devote themselves to Engineering, Architecture, Applied Chemistry in any of its branches, or any other manufacturing or commercial pursuit.

The education given in this department of the college is not intended to supersede such necessary practical training as can only be properly acquired in the workshop or factory. It is believed that, especially in the case of engineers, practical workshop and drawing office experience is an absolutely essential part of professional training. The sort of experience so gained cannot, it is thought, be obtained satisfactorily elsewhere than in places where the young men will see and take part in work done on a large scale, and under the pressure and all the other conditions of commercial life. No attempt is therefore made at University College to teach such work,—it is rather endeavoured to give those parts of preparation for a professional career which are complementary to, and cannot easily be obtained in, workshop and office training. This work includes, of course, lectures on Mathematics and Physics, on Mechanics and Graphical Statics, on Chemistry and Geology, on the Theory of Machines and Structures, the strength of Materials, the Steam Engine, &c., and instruction in drawing, geometrical and machine drawing, in graphical calculation and (so far as is possible) in the actual proportioning and design of structures and machines. Its special feature, however, is the instruction given in the Engineering Laboratory, which forms the subject of the present exhibit.

The Engineering Laboratory at University College, the first of its kind in this country, is based upon a scheme described in an introductory lecture to the Faculties of Arts, Laws, and of Science in 1875. It was opened to students in 1878. Its essential objects may be summed up by saying that *it is intended to provide systematic instruction in the experimental methods which serve for determining the numerical data employed in engineering calculations, and also to familiarize students with the strength and other physical properties of the chief materials used in construction.* The importance of such instruction is twofold. In the first place, the exact value of any numerical results derived from experiment, and the limits within which they may be safely trusted, can be rightly estimated only by those who have some practical and personal acquaintance with experimental processes of the kind employed in obtaining these results. In the second place, engineers are continually called upon to deal with questions in regard to which some essential data are altogether wanting, and they are therefore very often compelled to make special experiments for their own guidance. In such cases the probability of their obtaining accurate and trustworthy results will be much greater if their previous training have made them practically acquainted with the art of experimenting and with the methods that had been successfully adopted by others in dealing with analogous questions.

The following is a summary of some of the chief heads under which work is now carried on in the Laboratory:—(1) Experiments on the deflection, extension, or compression of materials such as are commonly used in practical work, with determination of their limit of elasticity and ultimate resistance, and examination of the ways in which these are affected by the form of the material and the manner in which force is applied to it; (2) Experiments on steam-engine working, the relative economy of different steam pressures, different degrees of expansion, the use of steam jackets, the mechanical efficiency under different conditions, &c; (3) Experiments on boiler working, consumption of fuel under different circumstances, &c.; (4) Experiments on friction; (5) Experiments on the use and accuracy of the apparatus commonly employed to measure force or work, dynamometers, brakes, indicators, &c.

The Laboratory contains a large testing machine capable of exerting a pressure of 100,000 pounds to test materials either in tension, compression, or bending, and having specially arranged appliances for making accurate measurements of extensions, deflections, &c.; a compound steam-engine working up to 20 Ind. H.P., specially arranged for experimental purposes, with measuring tanks, indicators, dynamo meters, &c.; a small engine, also arranged for testing: a vertical multitubular steam boiler; machine tools (lathes, shaping machine, drilling machine, &c.); a torsion testing machine, specially designed apparatus for conducting experiments of the kind just mentioned, as well as the necessary tools and appliances for working in wood and metal, preparing apparatus and specimens, along with standard measuring-apparatus.

The frame exhibited contains in the centre a plan of the laboratory, boiler-house, tank space, &c. Surrounding this are photographs of the exterior of University College, and of the interior of the laboratory, and smaller photographs of the testing machines, experimental engine, &c., and of the drawing room and laboratory with the students at work.—(*Corridor 2nd Floor.*)

1523. **BRITANNIA COMPANY, Colchester.**—Extra Strong Treble-Geared Lathe, as supplied to the British Navy. This lathe when driven by foot power will do the heaviest cuts with ease. It can be instantly altered to drive by either single, double or triple gear. It is especially adapted for those who have no steam power, and who require to take a heavy cut. These lathes are made in several sizes. The Lathe No. 15 is fitted with overhead motion and

division plate, and other appliances to any extent can be added. The No. 5 Lathe is fitted with a special appliance, by means of which screws can be cut to any thread. This can be fitted to any lock-geared lathe. Circular Saw Bench, fitted for either foot or steam power. The fret saws with vertical stroke and well-proportioned fly-wheels. The Screw-Cutting Lathe with 22 change wheels.—(*Workshop.*)

1524. **MELHUISH & SONS, 85 & 87 Fetter Lane, Holborn Circus, E.C.**—Amateur's Lathe for wood or metal, with adjustable chucks, and turning tools. Screw-cutting Lathe, complete with tools. Boys' Foot-power Machines for fret-work. Joiners' and Cabinet Makers' Tools. Various Tools for Carvers. Engravers' Tools.—(*Workshop.*)

1525. **EVANS, JOHN HENRY, 159 Wardour Street, Soho.**—Four Lathes. One self-acting slide and screw-cutting Lathe. One Lathe, with fittings for ornamental turning. Two smaller Lathes for ordinary technical school purposes. Tools, &c.—(*Workshop.*)

1526. **HOLTZAPFFEL & CO., 64 Charing Cross, S.W.**—Lathes and Tools for plain turning and screw cutting. Lathes for ornamental and decorative fine art turning. Tools employed for accuracy and various purposes in the constructive arts.—(*Workshop.*)

1527. **SYER, THOMAS J., 1 Finsbury Street, Chiswell Street, E.C.**—One College or School Workshop Bench, fitted for four pupils, but capable of working six. Supported on metal standards and fitted with four patent instantaneous grip-irons. Bench-knives, Holdfasts, Mitre Machine, Engineer's Vice Lathe, Sundry Tools.—(*Workshop.*)

1528. **TECHNICAL SCHOOL, University College, Nottingham.**—(1) Scroll Step. (2) Blocked Well Hole for Staircase, showing method of construction. (3) Hand Rail, for Well Hole Staircase. (4) Block illustrating the first lesson in the tangent method of describing hand-rail ramps and wreaths. Method of determining and applying bevils. (5) Construction for obtaining the Face Moulds and Bevils for a semi-circular Doorhead, in a circular turret. "Circle on Circle." (6) Scroll Termination to Hand-Rail, showing the method of describing the mould for the shank. (7) Panel and Hand-Rail for Staircase, ½ scale. Constructed by G. Richardson. (8) Patterns, Core Boxes, &c., for 2½ H.P. Cylinder. (9) Newel Staircase, ¼ scale. (10) Plank for Ramp and Wreath, showing application of face moulds. (11) Scribing Block. (12) Plan of Workshops, University College, Nottingham. (13) Photograph of University College, Nottingham. (14) Model of Queen Post Roof for Engine House, intended for raising heavy weights from the Tie Beams. Constructed by evening students. (15) Method of describing Face Mould, Tangents, Butt Joints and Bevils for Hand-Rail to Stairs, with one riser in centre of Well. The application of the face moulds to the plank is shown separately. Models for Mechanical Drawing Class. (*Room No.* 14.)

1529. **HANNIBAL, A., Instructor of the Technical Class for Boot and Shoemakers at the Polytechnic Institute.**—Models and Diagrams. (1) Showing the normal condition of a healthy foot. (2) The anatomical arrangement of the above. (3) Showing the points of measurement for cutting what is called long work, or thigh boots. (4) Showing the inner side, or arched waist of the foot. (5) The outside of the foot and division of the different classes of bones. (6) Showing a geometrical method for shaping the sole part of the lasts or models. (7) The method of gauging patterns into sets.

The instruction in this class comprises the physiological construction of the human foot, its power, functions, and natural requirements. The correct points at which measurements should be taken up, and the shaping and fitting up of lasts and models suitable thereto, in single pairs and sets of various sizes and widths. The art of cutting patterns of various kinds suitable for single pairs, and gauging the same by geometrical rule into sets of the various lengths and widths required. The selection of material most suitable for the various classes of work. Division of the various kinds of skins into sections showing how they should be cut to ensure economy and durability. The art of (what is technically called) stocking the work as it is being cut, so as to ascertain the exact cost of any particular pair of boots or shoes. The theory of fitting the different pairs together, so as to complete the top part of the boot or shoe, exactly adapted to the models upon which they are to be made. (*Room No.* 14.)

1530. **CITY AND GUILDS OF LONDON INSTITUTE, TECHNICAL COLLEGE, Finsbury.**—Specimens of Apparatus used in the Electrical Engineering and Applied Physics Laboratories (W. E. Ayrton, F.R.S., Professor).—The main object of the course of instruction is to train students in the application of the laws of physics to industry, and to lead them to see how such an application can be used to improve and cheapen industrial operations. The instruction is analytical rather than synthetical. The student's attention is first directed to a complete apparatus or machine; its action and the practical results obtained with it are then considered; and, finally, the scientific principles that underlie its correct working are evolved. The education is given partly by lectures, but mainly through the laboratory work of the students themselves. The laboratory contains many arrangements of apparatus for an organised series of experiments, each set complete in itself, so that the students will find ready in position all the apparatus necessary for carrying out seriatum a large number of experiments. Full printed instructions are appended to each experiment, and copies are supplied to the students. The students work in the laboratory in groups of three, these groups

being arranged so that students whose knowledge is about the same work together. The experiments are performed as nearly as possible in a specified order; and before a group of students is allowed to pass on to a new experiment, each member is required to show to the professor, or one of the demonstrators, his written-out notes of the previous experiment, including any deductions he may have made from it. After any student has completed all these experiments in the regular course, he is set to carry out what may be called scientific commercial experiments—that is, the kind of experiments a Master of a Works might arrange to have undertaken, to enable him, by the application of the principles of science to his trade, to turn out the articles he manufactures in the best and cheapest form. The special industries in connection with which Applied Physics is at present taught at the Finsbury Technical College are those involving the use of electricity or heat, and the accompanying are specimens of the instructions attached to the experiments in the various Laboratories for these two subjects. Those of the instructions marked with a cross refer to the apparatus which is on exhibit at the Health Exhibition.

Mechanical Department (JOHN PERRY, M.E., Professor).—Mechanical Laboratory.—Specimens illustrating course of instruction in the workshop for all students of the college. In every case the student is expected to give the result of his investigation in the shortest form. The observations which have led to this result must be arranged in tables. Sheets of squared paper must contain such necessary information as will enable the curves drawn upon them to be understood.

Chemical Department (H. E. ARMSTRONG, Ph.D., F.R.S., Professor).—Apparatus illustrative of the course of practical instruction in chemistry.

Applied Art Department (A. F. BROPHY, Esq., Headmaster).—Drawings and Designs for Applied Art Work, Models from Casts and from Life, Designs for Tapestry, Painting on Silk, Needlework, &c.

MODELS IN WOOD, ILLUSTRATING THE PRINCIPLES OF CARPENTRY AND JOINERY. BY H. STAYNES, INSTRUCTOR IN CARPENTRY AND JOINERY.—(1) Model of an Elliptical-headed Frame, to be placed in a circular wall, with linings and soffit splayed all round. The method employed for the soffit is original; in the opinion of the exhibitor the works on carpentry and joinery that mention this subject describe it upon wrong principles. (2) Model of Raking Mouldings. The method employed is original. Any case can be worked by it. In the case taken the plan of the mouldings makes an angle of 120°; one piece of moulding is inclined 24°, and the other 14°. (3) Small Model Pentagonal Roof, with the five hip-rafters cutting against a triangular prism. This is intended as an exercise to perfect students in cutting oblique timbers against vertical planes and angles. The principles employed in this are essential to a sound knowledge of cuts and bevels generally. (4) Triangular Piece of Work with the side A inclined 60°, the side B inclined 30°, and cut against side A, the side C vertical and cut against A and B. This is intended as an exercise in producing bevels required for butt joints. (5) Model with mitred angles, one angle acute, one obtuse, and one square. This is intended as an exercise on inclined mitred work. (6) Hand-railing. Shows the application of the face mould and bevels, squaring the wreath, &c. (7) Small Model of Squared Hand-rail. (8) Model showing angle brackets, for internal and external angles. (9) Intersection of Mouldings (hollow mitres). (10) (*a*, *b*, *c*) Method of placing all bevel lines direct upon the hip-rafters, jack-rafters, and purlins without making a drawing of the same. This method is original. It is simple and expeditious in its application for bevels generally.

MODELS ILLUSTRATING METAL PLATE WORK (PATTERN CUTTING). BY C. T. MILLIS.—The models have been made by students as part of their work in the class for metal plate work, which is useful to those engaged in its various branches, as coppersmiths, zinc, tin, and iron-plate workers, &c

The instruction in the class include the application to Pattern Cutting (i.e., development of surfaces) of problems in plane and solid geometry; such as the true shape of sections, and development of sectioned solids adapted to the wants of sheet-metal workers, and required in the construction of elbow, cowl, vase, bath, and other patterns. Attention is given to the practice of the trade with regard to the arrangement of joints or seams to suit the sizes of sheet metal which have to be used.

The students first draw the patterns on paper, and then make models (as shown in the exhibit) to illustrate the use and position of the lines used in their construction, and to test the accuracy of their drawing. Another part of the instruction in this class consists of lectures and experiments, where possible, on the composition of solders and other alloys, theory and practice of soldering; the physical properties of the metals in their manufactured condition with regard to malleability, annealing, &c., for hollowing and raising purposes. The action of air, water, and acids on the metals is also considered.

The patterns for some of the models have been constructed on a new system devised by the exhibitor, which makes the study of pattern cutting much easier by doing away with special methods for each case, and substituting principles on which the construction of most of the patterns needed by workers in sheet metal can be based. A description of this system will be shortly published.

MODELS AND DRAWINGS OF BRICKWORK. EXHIBITED BY J. CHANNON, INSTRUCTOR OF THE BRICKLAYING AND BRICKCUTTING CLASS.—Detailed drawings of gauged brick arches, with pediments showing the bond.

These drawings are fair specimens of work executed by the students in their first year course. In connection with drawings of this description (which are usually full size), the students receive instruction as to the methods adopted in the actual work, i.e., the system of gauging and moulding the bricks, how to distinguish between good and bad materials, also good and bad work, the methods of obtaining the joints and bevels, the application of moulds and templets, and where necessary, in order to thoroughly understand the application, the students execute a portion of the designs.

Class LI.

Science Teaching.—(*a*) Apparatus and Models for Elementary Science Instruction in Schools; Apparatus for Chemistry, Physics, Mechanics, &c.; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of the School Work in these subjects; (*d*) School Museums.

1531. E. C. ROBINS, F.S.A., 14 John Street, Adelphi.—Some prefatory remarks are due to this series of illustrations of the fittings required for applied science Educational Buildings. The drawings themselves are selected from a series specially prepared by Mr. Robins, to illustrate a course of lectures delivered by him at the Royal Institute of British Architects, which were published by that body in its Transactions for the years 1883–84, and are obtainable there. (1) "On the Buildings required for Applied Art and Science Instruction." (2) On the fittings required for the above. (3) On the Ventilation and Warming of such Buildings. (4) The above papers were preceded by a lecture delivered at the Society of Arts in 1882, and published in the journal of the Society "On English and Foreign Technical Education." (5) The same subject was also discussed by Mr. Robins in a paper "On Secondary School Buildings," delivered at the Society of Arts in 1880, and published in the journal. The provocative cause, however, of the production of these papers (which are mentioned here to enable students to see them, since they have not as yet been published collectively) was the foundation of the City and Guilds Institute for the advancement of Technical Education, some five or six years ago. As a representative of one of the contributing Guilds, Mr. Robins became a Member of the Executive Committee of the Institute, and in that capacity went to Germany with Professors Armstrong and Ayrton, who had been commissioned to inspect and to report on the latest buildings and fittings of the Science and Art Schools of that country and Switzerland, Bavaria and Austria. The papers before mentioned were the result of this experience, coupled with a tour in the English provinces; and the fittings of the Technical College, Finsbury, designed by Messrs. Armstrong and Ayrton, on their return from the above tour, are among the latest executed examples. A fitter time than the present could not have been selected by the City Companies for the inauguration of the great work they have set on foot, the crowning effort of which is represented by the noble building in which these drawings hang, a good portion of which having been lent to the Executive of the International Health Exhibition, to give a fuller development to the educational side of the question, and the efforts made to ensure healthful laboratories. The appointment of the Royal Commission on Technical Education quickly followed upon the establishment of the Institute, and the result has been a general awakening to the fact that the maintenance of our pre-eminence as a practically technical nation, will in future very much depend on the possession of educational advantages equivalent to those which are already common upon the continent, and which happily are yearly growing in number and importance here, but are comparatively a new departure in this country. The popularization of applied science teaching has been one of many good results of the work done and still doing by the authorities of South Kensington, and its grants in aid upon the results obtained, coupled with the technical examinations inaugurated by the Society of Arts (now carried on with increasing success by the City Guilds), have been the means of inducing considerable attention to be given to the scientific principles underlying the various industries of the country. Reading from left to right the drawings exhibit, 1. Dr. Armstrong's working bench for chemical students, which has the merit of requiring all operations evolving odours of any kind to be done upon a shelf under a continuous hood from which the fumes are extracted by down-cast shafts in the manner indicated. The lead-covered table top has no basins, but a sink is provided at each end. This is the system adopted at Finsbury Technical College. 2. Perspective sketches of the Sulphuretted Hydrogen Closets in use at Graz in Austria, and at Leipsic in Germany, showing the vertical draught slits at back. 3. Dr. Hofman's laboratory draught closet, designed for the chemical laboratory at Bonn and Berlin, and since very generally adopted. 4. Professor Roscoe's working bench for chemical students, in use at Owen's College, Manchester. In this example basins and fume closets are provided for each pair of pupils in the oak topped tables. 5. Dr. Armstrong's private laboratory draught closet, for Finsbury, showing a continuous horizontal draught slit at back in connection with the extract flues aspirated by gas jets. 6. This group of four drawings show the basement, ground, and first-floor plans and sections of Professor Baeyer's chemical laboratory at Munich, one of the best of foreign examples. 7. The glazed drawing in the centre is a view of the Merchant Venturers' School, at Bristol, in course of erection by Mr. Robins, and under it is a plan of the 2nd or Chemical, Physical and Metallurgical laboratory floor. 8. Dr. Thorpe's arrangement for the fittings of the Yorkshire College, Leeds, showing draught and evaporating closets, sulphuretted hydrogen closets, &c., &c 9. Perspective view of a student's

working bench, from the laboratory at Leipsic. 10. Ground plan of the new chemical laboratory at Dundee. 11. Plan of the physical laboratory at Japan. 12. The first and second floor plans of the Finsbury Technical College, showing the fittings in situ. (*Corridor 2nd Floor.*)

ALLAN GLEN'S INSTITUTION, Glasgow. (*See Classes* 50 & 53.)

OLDHAM SCHOOL OF SCIENCE & ART (J. P. PYTHIAN & JOHN ROBERTSON). (*See Classes* 50 & 53.)

RIGG, JAMES, 11 Queen Victoria Street, E.C.—Apparatus illustrating theoretical mechanics. (*See Classes* 50 & 53.)

SHEFFIELD SCHOOL BOARD CENTRAL SCHOOLS. (*See Classes* 50 & 53.)

TECHNICAL SCHOOL, Manchester (J. H. REYNOLDS, Secretary). (*See Classes* 50 & 53.)

Class LII.

Art Teaching.—(*a*) Apparatus, Models, and Fittings for Elementary Art Instruction in Schools; (*b*) Diagrams, Copies, Text-Books, &c.; (*c*) Specimens of Art Work, Modelling, &c., in Schools.

1532. ART FOR SCHOOLS ASSOCIATION (Hon. Sec. MISS M. E. CHRISTIE) 29 Queen Street, Bloomsbury, W.C.—The object of this Association, founded in July 1883, is to place before boys and girls, in board and other elementary schools, works of art selected upon some definite principles, to accustom children from their earliest years to the knowledge of what is really beautiful, and to inculcate indirectly a love of both nature and art. With this view the committee have endeavoured to form a standard collection of examples from which the groups exhibited have been selected. This collection (of which a complete catalogue is published and may be had on application) comprises—(1) Pictures of the simplest natural objects, e.g. birds and their eggs and nests, trees, wild flowers, scenes of rural life, such as town children seldom see, and country children often fail to enjoy. (Two drawings, "The Sunflower" and "The Foxglove," belonging to this division, exhibited in Group B, have been reproduced by Mr. W. Griggs from prize drawings at the South Kensington School of Art, and are published by the Committee of the Manchester Art Museum and the Art for Schools Association, price 2s. 6d. to the public, and 1s. to schools.) (2) Pictures of animals as aids to instruction in natural history, also in relation to mankind, especially to children. (3) Pictures of peasant and artizan life, incidents of heroic fiction, illustrations of popular legends and household stories. (4) Pictures of buildings of historic interest, and artistic excellence. (5) Landscapes and sea-pieces, especially illustrations of daily life in the fields or on the sea. (6) Historical portraits, and episodes from history. (7) Reproductions wherever available at a reasonable cost of the works of the great masters of our own and foreign countries. In the course of last winter the Art for Schools Association invited the managers of Elementary Schools throughout the country and others interested in the question to a preliminary exhibition of their selected works. A steady and continuous demand for the works has followed, and the Committee are encouraged to believe that they are endeavouring to supply a want which is becoming more and more widely felt. The support given to the Association by the principal print publishers of London has enabled the Committee to offer the various groups to school managers on very advantageous terms. The Association proposes, moreover, when its funds permit, to arrange loan collections of pictures which will be circulated among such schools as are unable to bear the cost of purchase. The President of the Association is Professor Ruskin, and among the Vice-Presidents are the Right Hon. A. J. Mundella, M.P. (Vice-President of the Council on Education), Right Hon. W. E. Forster, M.P., Sir Frederick Leighton, P.R.A., Mr. Matthew Arnold, Mr. Robert Browning, &c., &c. (*Corridor Ground Floor.*)

SCHOOL OF ART WOOD-CARVING, Royal Albert Hall, S.W.—*See Classes* 50 & 53.)

TECHNICAL SCHOOL, Manchester (J. H. REYNOLDS, Secretary).—(*See Classes* 50 & 53.)

Class LIV.

Schools for the Blind and for the Deaf and Dumb.—(*a*) Apparatus and Examples for Teaching; (*b*) Specimens of School Work.

1534. SOCIETY FOR TRAINING TEACHERS OF THE DEAF, AND DIFFUSION OF THE "GERMAN" SYSTEM IN THE UNITED KINGDOM, 298 Regent Street, Portland Place, W. (Major-General F. C. COTTON, C.S.I., Chairman.)—The Education of the Deaf and Dumb is, at the present time, undergoing, in many countries, changes and developments so important that they constitute a veritable revolution. However wonderful it may appear to the ordinary public mind, the dumbness is now in fact removed which has so generally been associated with deafness, as represented in the common but most unfortunate and misleading term—"Deaf *and* Dumb."

The art of instructing the Deaf has a history of its own, singular if not unique. It has been discovered and lost, rediscovered and again lost, in different ages, different countries, and by men acting not only independently of each other, but in entire ignorance of each other's existence.

Though Christianity, soon after its establishment, began to surprise and bless mankind with works of benevolence and philanthropy which had never been seen before, it did nothing for the "Deaf and Dumb." Its Divine Founder performed one of His first and most striking miracles on the man "who was deaf and had an impediment in his speech;" but the far more common Oriental affliction of blindness engrossed, as it still does, a very much larger share of notice and sympathy; and for many centuries of the Christian era the Deaf and Dumb were as much overlooked and neglected as they had ever been in the darkest times and countries of Heathendom.

Allusion to them and to their condition is rare and exceptional; and, viewed as we now view the subject, all such allusions seem irrational and absurd. To this extent, the Deaf may be said to have attracted some attention, but certainly they received no help. We find that they were occasionally referred to in the Old Testament; and in the New Testament we read of the sublime miracles by which "the Deaf" were made "to hear and the Dumb to speak." Among classic authorities they were mentioned by Aristotle, legislated for by Justinian, and dismissed in a couplet by Lucretius. The first Christian writer who speaks of them is St. Augustine, and after him the Venerable Bede, who relates how St. John of Beverley, Bishop of Hexham, brought a deaf man "to speak and declare his secret thoughts and purposes, which before that day he could never utter to any man." This was associated so immediately with miraculous power, that at this distance of time we cannot correctly ascertain the real facts of the case. After this, eight centuries elapse before there is any further record of the teaching of a deaf-mute. It is found in a work entitled "*De Inventione Dialectica*," by Rodolphus Agricola, born at Groningen in the year 1442. A century later Jerome Carden, an Italian, writing on the condition of the Deaf, pronounced their instruction, though "doubtless difficult, still to be possible;" and that it *was* possible was satisfactorily proved by a contemporary of his own, Pedro Ponce, a Benedictine monk of Ona in Spain. Ponce taught, and taught successfully, but he left no record of his work; and when he died, in 1584, his knowledge and experience died with him. Nearly forty years afterwards another Spaniard, Juan Paulo Bonet, taught a deaf fellow countryman of high rank; but he did more, he wrote upon the subject also. His book, still extant, is the first formal essay on the instruction of the Deaf which was ever printed. It was published in 1620. From this time there was an occasional awakening of the attention of intellectual men, not only to the importance of the subject, but to the practicability of instructing those who were without the sense of hearing. Yet alike in Italy, in Germany, in France, and here in England, the same story might be repeated, in regard to any progress made. It is a history telling of speculations and experiments, of the doubts of some and the wonderment of others, followed by the entire decay of all interest in the subject until the early part of the eighteenth century. Again the same phenomenal incident occurred. Three men, in different countries, took up the same subject in a practical manner, and, employing different systems, found their way to successful results of different character and degree, without, as already mentioned, the knowledge of each other's existence. Thomas Braidwood in this country, Samuel Heinicke in Germany, and Charles Michel de l'Epée, in France, commenced that work among the deaf children of their own countrymen which led to the permanent establishment of schools, each on his own system, first of all in their own countries, and then in others which were quick to note their proceedings and to follow their example.

At the beginning of the present century there was but one such public institution, very small and only just established, throughout the British Empire. Half a century ago the number had only increased to *ten*. At the present time there are in the United Kingdom about *fifty*, and they contain about 2700 pupils. This is a total twice as large as that of thirty years ago, and yet it is wholly inadequate, for it is held that there should be now at school 4000 pupils at the least. Of the ten Institutions existing in Great Britain 50 years ago, there was on the eastern side of England, between the Thames and the Tweed only one. There are now eight. The distribution of small schools throughout the country, by the operations of School Boards and through local effort, will do much to make education more accessible, by removing the obstacles of distance from home, expense, and delay in waiting for periodical elections. A further proof of that want of interest in this subject, which so long prevailed, is furnished by the fact that no Census of our deaf population was ever taken in this country until 1851. The returns of the Fourth Census, that of 1881, have lately been made public.

When it is considered that only within the period indicated has the education of the Deaf come under public notice at all,—that for not more than half a century has it been known beyond the circle of those immediately connected with it, and that even now the general ignorance upon the subject is lamentably great,—there are still undoubted signs of progress, very encouraging to those who have the welfare of this most interesting class so much at heart.

It is computed that the number of persons Deaf and Dumb, of all ages, throughout the world, exceeds *one million*. Taking the proportion as one in every 1500 of the world's population, the number has been given as 1,082,132. Excluding, as we must do, all uncivilized countries, remembering that the education of this class is the product of Christianity and civilization, and is almost entirely confined to Europe, America, and a few British colonies

and dependencies abroad, it is no wonder that while the approximate number of deaf children of school age would, on this reckoning, be 180,000, the highest tables which have been recorded, place the total on the school register below 30,000. The countries in which more than 1000 pupils are at school are:—Austria-Hungary, with 1300: Italy, with 1500; Great Britain, with 2700; France, with nearly 4000; Germany, with nearly 6000, and the United States with a total of more than 7000.

The three men already named—Heinicke, De l'Epée, and Braidwood, were spared to continue their work, and see it so firmly established in their respective countries, that it has been carried on uninterruptedly ever since. Heinicke used speech as the vehicle of instruction. De l'Epée used signs and the one-handed alphabet. Braidwood taught articulation, but employed signs and the two-handed alphabet as his medium of teaching. Thus the title of the German (but recently the Pure Oral) system is used to describe the method of Heinicke, the French system that of De l'Epée, and the combined system that of Braidwood.

Until about twenty years ago the German system was almost exclusively confined to Germany and Holland. Its introduction to public notice in this country took place in 1867, and is chiefly due to the late Baroness Meyer de Rothschild.

In 1872–3 an English lady and gentleman, with a view to ascertain the best possible mode of education for their deaf daughter, devoted themselves for the better part of those two years to a painstaking investigation into the methods and practice of educating the Deaf, not only in Great Britain and the principal countries of Europe, but in the United States and Canada. They were led to the following conclusions:

(*a*) That the German system was the best for the education of all deaf children, especially for the poor.

(*b*) That it was the best for the education of their own child.

(*c*) That to establish this system, and to raise the education of the Deaf to proper efficiency and importance, a Training College for Teachers was a necessity.

In 1877 action was taken on these conclusions. The society was started whose title heads this notice, which, in the following year, was able to open the training college at Ealing. The Society will exhibit here in Group 6, Class 54, No. 1534, a school at work, where practical illustration will be given of the method of teaching. This, in conjunction with kindred societies, it is intended to do frequently, and, if possible, daily. In the year last named, 1877, a conference of head masters of institutions and others interested in the Deaf was held, in which the various systems were represented and discussed, and the movement in favour of the German system received an impetus of which the results were soon apparent and are in operation still. In 1880, there was held at Milan a great International Congress, in which almost every country, with the very remarkable exception of Germany itself, was conspicuously represented; and there, in an assembly of over 160 experts, it was resolved, with only four dissentients, that "the Pure Oral method ought to be preferred to that of signs for the education of the Deaf and Dumb." From this time the advance of the Pure Oral system has been rapid and continuous. Out of 500 institutions now in operation, in various parts of the world, this system, which makes speech the basis of all education, is adopted and employed in by far the large majority of them. Of the remainder, a considerable proportion are on the combined system, while a small number still retain the manual or sign system, pure and simple. In fact, the Pure Oral system is the one in actual practice in all the schools of some countries, in nearly all those of other countries, and in a continually increasing number in every country where the deaf are taught at all.

From these facts, and from what will be seen in the Exhibition, visitors will be able to appreciate the statement in the General Official Catalogue (pages 123, 124). "The education of deaf mutes is of more modern growth, and has been attended by a success which may be pronounced truly marvellous. Until recent years it was considered useless to attempt to teach those to speak who were born deaf; but this apparently impossible feat is now successfully accomplished. Not only this, but deaf children can be taught to understand what is said to them by following the movement of the lips and the facial expression. To such great perfection has this special branch of education been carried, that in some cases deaf persons can carry on a conversation with those they know, so that a stranger would not perceive their infirmity." (*Room No.* 2.)

1535. ASSOCIATION FOR THE ORAL INSTRUCTION OF THE DEAF AND DUMB. Under the Patronage of Their Royal Highnesses the Prince and Princess of Wales. President, the Earl Granville, K.G. Director, William Van Praagh, Esq. School and Training College for Teachers, 11 Fitzroy Square, W.—The Association for the Oral Instruction of the Deaf and Dumb was founded in 1871. Its chief objects are, 1st. To propagate in this kingdom the pure oral instruction of the deaf and dumb, which means to teach them to talk, and to enable them to receive instruction by means of spoken language only, to the rigid exclusion of the finger alphabet and all artificial signs. 2nd. To train hearing persons to become qualified teachers on this system, and to find employment for them either in schools or in private families. 3rd. To maintain a normal school for the instruction of deaf children of all ranks and creeds.

The exhibits of the Association consist of materials and manuals used in teaching, a time table for the use of deaf and dumb schools during the whole course of instruction, an illustrated almanack or season table, and a numerical table for the use of deaf and dumb children, which is also adapted for blind children, and papers on the education of the deaf and dumb.

A few words in explanation of the system publicly introduced by the Association: The affliction of dumbness does not exist among the so-called deaf and dumb, who are merely those who have been either born deaf or have become so after birth through illness. Not being able to hear, they are naturally unable to imitate speech, and consequently remain dumb. The faculty of hearing finds a substitute in that of sight. This method of artificial hearing (lip reading) is the principal object in the tuition of the deaf child, who is made to understand what is said by carefully watching the movements of the speaker's face. In teaching the child to speak, the teacher follows the same natural method instinctively adopted by the mother in the instance of a hearing child. Instead of making the pupil hear the sound, the teacher makes him observe the movements which are produced on the face by speaking the word, and teaches him to associate the facial movement with the object alluded to.

The child is first instructed to breathe properly, and to notice the difference between inhaling and exhaling. Then vowel sounds are taught, after those consonants; the vowel sounds and consonants can then be combined so as to form words; the meaning of the words is illustrated by showing the objects themselves, or pictures of them.

The following process takes place:—

The teacher pronounces a sound, the child imitates it (speaks), and learns to recognise it when spoken (lip reads), he also associates the sound with the letters (reads), and imitates them on the blackboard, the slate or paper (writes).

Now the words can be extended to simple sentences, the simple sentences to compound ones, and so on, slowly, by easy steps, to more advanced lessons, until the pupil is able to receive instruction by spoken language and lip reading in all the branches of a sound English education.

Any attempt to combine this system with others would produce unsatisfactory results.

A public lesson is given on Wednesday afternoons at 3 o'clock punctually at 11 Fitzroy Square, when the work in all its stages can be seen. The history of the introduction and progress of the Pure Oral or German system is contained in the Report of the Association for 1883, which, together with other papers on the subject can be had *free*, on application to either the Secretary or the Director, 11 Fitzroy Square, W.—William Van Praagh, Director. (*Room, No.* 10.)

1536. JEWS' DEAF AND DUMB HOME (THE) (S. SCHÖNTHEIL, Principal), Walmer Road, Notting Hill, W.—The object of the Exhibitor is to show how far he has succeeded with his pupils taught on the pure oral system under circumstances anything but favourable, in enabling them to lip-read, to articulate, to use the vernacular of their country fairly correctly and fluently, and to acquire such an amount of general knowledge, as will render it possible for them to continue their education, by books and conversation. The pure oral method of teaching the deaf and dumb is based on the recognition of the true state of this afflicted class of humanity. The real affliction is deafness, and mutism is only its necessary consequence; the organs of speech of the deaf and dumb are perfectly intact, and their intellect varies in the same degree as that of normal children. The want of this knowledge, or rather the misconception on this point, prevailing not only in the classical, the middle, and even to some extent in the modern age, called into existence the systems known as the mimic, sign, or gesture, the manual, and the mixed system. Clear-sighted men of various lands and different times such as Pedro de Ponce, Bonet, Wallis, Braidwood, Amman, Van Helmont, Pareira, and last but not least Heinicke, knew and made known the real condition of the deaf and dumb, and preached, as well as practised, the pure oral method: but, as the great Schiller says, "Gegen Dummheit kämpfen Götter selbst vergebens," their voices proved too weak, because their times were hard of hearing, and the recognition that the pure oral method is best suited to restore the deaf and dumb to their birthright as men, by bestowing on them that particular gift which distinguishes man from the lower animal, is an achievement of comparatively recent date Here the names of Hill, Arnold, Rössler, and others, equally able and zealous, deserve mention. Lip-reading means the ability of understanding the articulate utterances of others by watching the various movements of the organs of speech by which articulated words are moulded into being. This ability is the very backbone of the pure oral system, and by the higher or lower degree of its development this (system) stands or falls; for fluent lip-reading is conditional upon an articulation in strict accordance with the laws of physiology of speech, and renders communication with the outer world easy and agreeable. This, again, in its turn, greatly facilitates the acquisition of idiomatic language, which opens to the deaf and dumb not only the many and perpetual sources of living intercourse with the human intellect, but also uncloses to them the rich stores of literature, and thus renders their education a sure success. The advantages accruing from the pure oral method to the physical welfare of the deaf and dumb are equally great. The habit of watching the slight movements of the organs of speech, or the constant hanging on the lips of others, so to speak, gives the eye that vivacity and lustre which are so

conspicuously wanting in the deaf and dumb taught on the other systems. The more active process of inhalation and exhalation, consequent upon articulate speech, not only materially strengthens the respiratory organs, but at the same time tends to invigorate the whole body. And the statistics, which show that the death-rate among the deaf and dumb who had no teaching at all or had been taught on the silent system is much higher than among their more fortunate fellow-sufferers taught on the pure oral method, conclusively point to the fact, that articulated speech cannot be dispensed with with impunity, and that silence (in a measure) means death. A great deal more might be adduced in favour of the pure oral method. This is, however, rendered unnecessary by the gratifying fact that, since the Milan International Congress of Headmasters of the Deaf and Dumb Schools (1881), this method has passed the stage of disputation and entered upon that of demonstration. (*Room No.* 10.)

1537. **DEAF AND DUMB SCHOOLS (THE), Old Trafford, Manchester (W. S. BESSANT, Secretary).**—(1) Specimens of School Work, Language Lessons, Drawing, &c. (2) Specimens of Handicraft by old pupils of the Institution. (3) Time-table Pictures. (*Room No.* 10.)

1538. **L'ISTITUTO SORDOMUTI, Bologna (CESARE GUALANDI Director.)**—(1) Method of teaching people born deaf, and deaf mutes. (2) Specimen of their work. (*Room No.* 10.)

1539. **BRITISH ASYLUM FOR DEAF AND DUMB FEMALES (THE), Lower Clapton.**—The British Asylum for Deaf and Dumb Females, of which their Royal Highnesses the Prince and Princess of Wales and other members of the Royal Family are Patrons, was instituted in 1851, and is certified under 25 & 26 Vict. c. 43. The Institution is for adults. Its object is threefold, namely (*a*) To educate or continue the education (secular and religious) of female deaf-mutes. (*b*) To give manual and technical training, with a view to enable the deaf-mute to earn an honest and independent livelihood. (*c*) To provide an asylum or home for the aged and helpless. The exhibits will show some results of the educational and manual instruction which has been found practicable in the case of those admitted; many of whom had been utterly neglected and untaught. The oral or German system of instruction, not being found practicable in the case of adults untaught when young, the sign and finger method of instruction has been in most cases the only possible means of education. Some of the inmates, who are not congenital deaf-mutes, are able to articulate words and short sentences. Amongst the specimens of work exhibited will be found knitting by two aged *blind* deaf-mutes; handwriting—arithmetic—and English composition, by inmates who entered the asylum at an advanced age, and were, till admitted, quite ignorant and uneducated. Good specimens of laundry-work and needlework of all kinds are amongst the exhibits. Secretary, W. T. Hillyer. Office: 27 Red Lion Square, W.C. (*Room No.* 10.)

1540. **DEAF AND DUMB ASYLUM, Old Kent Road, London, and at Margate. (Established 1792.) For the maintenance, education and clothing of indigent Deaf and Dumb children. Patron: HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.**

The asylum was first established in Bermondsey. In 1807 a permanent building was founded in the Old Kent Road. In 1875 a branch asylum was opened at Margate by the Prince and Princess of Wales. In 1880 such branch was enlarged to accommodate 350 children. The system of instruction adopted up to the year 1881 in this institution was that known as the "combined," since which date a separate and distinct "oral establishment" has been added, which is at present being conducted at St. Lawrence, Ramsgate. 4652 children have received the benefits of the institution; 1807 children have been apprenticed to various trades at a cost to the charity of £16,936 14s. 6d.

The exhibit represents some of the work done in school by the afflicted inmates of the asylum. Treasurer, Charles Few, Esq.; Secretary, W. H. Warwick. Offices: 93, Cannon Street, London. (*Room No.* 10.)

1541. **YORKSHIRE INSTITUTION FOR THE DEAF AND DUMB, DONCASTER.**—In the education of the deaf the acquisition of language is the chief aim. This cannot be achieved without example and illustration, in the giving of which much information may be directly and indirectly conveyed. The vast ground, however, that has to be traversed by a teacher of the deaf, precludes him from placing his pupils in the same category as speaking children, but when once they are able to think, the work accomplished is thorough and lasting.

In the above institution the whole of the educational efforts are directed to careful development of the intelligence, and the cultivation of habits of thought, which shall find ready and adequate expression in language.

There are two departments in the school, the pure oral and the silent. In the former the pupils are taught entirely by speech, lip-reading and writing. In the latter by the intuitive method, as under the oral system, writing being substituted for speech. There are 98 pupils in the oral, and 43 in the silent classes.

The two departments are separated during school hours, and no signs are allowed in the process of teaching. So far as practicable every lesson is illustrated, either by the actual object,

pictures, or black board sketches; the ability to make such sketches being an essential qualification of the teachers.

The head master examines every child in the school once a month, discovers weak points, and offers suggestions, or issues instructions for future guidance.

The examination papers submitted are those for the month of April, and were in progress before the head master was aware that a section of the Exhibition would be devoted to the interests of the deaf and dumb. The papers have received no correction, and are bound up in volumes, representing the work of each class.

To train the powers of observation, proportion, &c., as well as to assist the children in the occupations they may follow, drawing takes a prominent place in the routine.

Fancy needlework is not discouraged amongst the girls, though it is not specially taught. The girls do all the making and mending for the Institution without a sewing machine, and samples are herewith submitted of hemming, seaming, stitching, felling, gathering, herring-boning, the making of a button-hole or loop and the insertion of a gusset or patch. Cutting out of garments, so especially needful for girls, receives careful attention. The girls are also taught every branch of domestic work.

A class for wood carving and turning affords an opportunity of profitable employment in leisure hours, and directs the attention of the boys in a channel which may hereafter become a means of livelihood. The carved wall mirror-frame and book slide, by W. Shotton, show the result of eighteen months' instruction.

Apparatus.—A deaf child speaks in consequence of its knowledge of the position of the tongue, &c., required for the production of certain sounds. The position of the organs of speech must be taught, and the reflector exhibited is for the purpose of illuminating the interior of the mouth, in such a manner that the child can see exactly the mode of production of such sounds as *g*, *k*, *j*, &c. In using it the teacher lights the jet and stands before a large mirror, with the pupil by his side. The attention of the child is directed to the reflection in the mirror, and the child tries to imitate what it sees; the teacher then turns the reflector to the child's mouth, and again directs its attention to the reflection in the mirror, and points out any defect. When once the pupil comprehends the nature of the sound required practice will ensure its reproduction. The reflector minimises the manipulation of the throat by the teacher.

The manipulator is simply a substitute for the finger; the curved end is extremely useful in obtaining the *ch* sound. The child is required to make the *t* sound; the teacher then gently presses down the tip of the tongue and the *ch* sound follows. It is also useful in perfecting *s* and *sh* sounds.

The vibrator is used to obtain such sounds as *z*, *zh*, *e*, *j*, &c. The teacher places one end between his own teeth, the other end against the teeth of the child; the latter, who also places his hand against the teacher's throat, feels distinctly the peculiar vibration and readily imitates it.

The accessory words in language present unusual difficulties to the deaf. The preposition box serves to demonstrate to the eye the use of almost every preposition and prepositional phrase. The lid should be on hinges to move up and down. Exercises with it should be as follows. Mary, lift *up* the lid of the box. Put your thimble *into* the box. It (the thimble) is now *in* the box. It is *inside* the box. Who will take it *out of* the box? Will it pass *through* the hole of the box? Let me see! Here is a piece of string. Tie it (the string) *round* the box, &c., &c. An ingenious teacher will readily multiply examples, embracing almost every preposition in use. The school books exhibited are those in daily use.

The whole of the exhibits are submitted with the object of showing how, in the above Institution, the deaf are taught the use of language, so as to take their place in the speaking world, with the results of their misfortune mitigated in as high a degree as is possible. (*Room No.* 10.)

1542. STAINER, REV. WILLIAM, 27, Alexandra Villas, Finsbury Park, N.—The deaf require a special means of instruction, because the same conditions do not exist in them as in other children. Their deafness excludes them from the reception of ideas through the medium of sound, whilst the hearing child associates ideas with sound from its infancy. The deaf child is thus shut out from speech and all that speech conveys during its earliest years, and its only form of language previous to being brought under instruction consists of rude gestures. Taking these as the basis, we may improve them and add conventional and arbitrary signs, and so develope a language suited to their immediate wants, but in so doing we only provide them with the means of exchanging ideas amongst themselves and with their teachers; and to say nothing of the imperfection of this sign language as an instrument of thought and means of expression, we build up a barrier which excludes them from intercourse with the world at large. If it were desirable to form a community of deaf mutes, this would certainly be the best means to accomplish it; but it would surely be sinful to increase that isolation which is the most deplorable part of their affliction, and which it is doubtless our duty to endeavour by every means in our power to remove. All deaf children capable of instruction should therefore be taught to speak and use the language of those with whom they are surrounded in daily life. That they can be so taught is no longer a marvel, for day schools are now established in various parts of the metropolis, where the simple process by which dumb children are made to speak

can be witnessed by any one desirous of becoming acquainted with the method. To carry out the system effectually, an intimate knowledge of the elementary sounds of our language and how those sounds are produced is essential, as well as a facility of conveying that knowledge to the deaf child through the senses of sight and touch. Also an acquaintance with the formation of sounds into syllables and words, and the construction of sentences graduated to the different stages of development of language, and suited to the slow growth of the child's intellect. Happily special training can now be obtained at training colleges for teachers of the deaf by any one desirous of taking up this most interesting and benevolent branch of education; and when the time comes that these colleges are capable of supplying sufficient teachers to meet the demands of some five hundred deaf children who require instruction in the metropolis alone, we shall realise that change which is prophesied and so earnestly to be desired, that our "deaf *and* dumb" are now deaf *not* dumb. The pictures designed for the use of deaf children include three series. (1) 24 Picture Sheets, with 384 Illustrations of Objects. (2) 23 Picture Sheets, with 138 Illustrations representing actions. (3) 27 large Picture Sheets, containing Illustrations of the animal and vegetable kingdom, various trades, and the heavenly bodies. Every one of these is more or less useful in bringing before the *eye* of the *deaf* child the shape, form, and general appearance of things and persons with which he has yet to become acquainted, but in the words of an eminent teacher "the pupil must not be allowed to dwell upon the picture alone, but must have his attention directed to similar objects and circumstances in his own surroundings; in other words, he must be made to understand the living world in which he finds himself, and to a proper understanding of which the picture is only to be used as a help." The "Object Lessons" are for use with the "Object Pictures," and are necessary in teaching deaf children from the earliest stages. They form a "Reading and Language book" containing almost every word in common use, with an index of reference to nearly 2300 words found in the lessons. The easiest forms of language only are used, as it is essential with the Deaf just beginning to learn their mother tongue, at whatever age they commence, to use forms of expression which would be understood by infants in a nursery. (*Room No.* 10.)

1543. **YORKSHIRE SCHOOL FOR THE BLIND.** *General Remarks.* — The system pursued in this school is, that education in mental subjects shall be pursued simultaneously with training in some handicraft. This plan is found of great value, for the pupils are not withdrawn from mental training just at the time when they begin to think for themselves, as is the case with many seeing children. Hence we have youths, who are working at basket and brushmaking, attending school a certain time each day until they are nineteen or twenty years of age. The proof that this plan does not impede their industrial training is shown by the quality of work we exhibit. We believe, too, that a plan like this is conducive to their general good health. In addition to the usual school lessons and training in a handicraft, the school course includes musical training for those with suitable ability, and gymnastic exercises, including marching, dumb-bell practice, ladder exercises, &c. The systems of writing in use in the school are:—(1) *The old pin type.* One of the earliest adopted for the blind. It can be read by the seeing, and blind, with good tactile sensibility, can make it out. (2) *Braille type*, which is very legible to the blind, easily written by them, and is of great value. The books done in Braille type by the pupils are exhibited for the purpose of showing how this type may be made use of, by an intelligent teacher, to produce his own note or text-books for class use. (3) *Lead pencil writing by the blind.*—These specimens are written by means of the Guldberg writing apparatus (also exhibited). The apparatus is the invention of F. Guldberg, a teacher in the Royal Blind Institution, Copenhagen. An ordinarily intelligent blind child, of eleven or twelve years old, will learn the use of the apparatus in about thirty or forty lessons of one hour each. *Raised maps or geographical models.*—These models show three methods of construction:—(1) *Palestine*, modelled in clay, from which this plaster cast, backed with linen, has been taken. (2) *Yorkshire*, coast line, sea and rivers carved out; mountains carved out of pieces of flat wood glued on the board. *The lines of railway* are made of wire stretched fron one town to another, and are very useful in helping the pupils to find the various towns. *The rivers.*—In order to enable the pupil at once to know in what direction the rivers are flowing, the *right bank* is left with a sharp edge, and the *left bank* is bevelled smooth. (3) *England and Wales.* (4) *Europe.*—The clear, sharp *coa t line* is made by cutting out the land from the water with a fretwork saw, thin planing say $\frac{1}{8}$ in. from the underside of the water and screwing the whole down. The *mountains* were cut out in cork and then glued on. The *rivers* are cut out with a chisel or graving tool. *Macrame lace.*—The production of this work seems to be a useful addition to the few occupations which can be pursued by blind females. The material is cheap, apparatus simple, and the operation on the whole not difficult. *Cane work.*—This is also an operation eminently suitable to blind females, materials and tools being quite inexpensive. *Basket work.*—The samples sent are made entirely by present or former pupils of the school. The brushes and baskets exhibited are chosen from ordinary stock, and are *not specially made* for this exhibition. *Brushes.*—These are also drawn or set by blind pupils and men. The finishing of the woodwork is done by seeing labour. *Mats.*—These are made of Esparto grass by the younger boys, as a preparation for the work of basket making. (*Room No.* 11.)

1544. NATIONAL INSTITUTION FOR BLIND CHILDREN, 56 Boulevard des Invalides, Paris.

The National Institution for Blind Children, in Paris, which celebrated, on the 14th of May last, the centenary of its foundation by the illustrious Valentin Hauy, is the first school for the blind which ever was established in Europe. The Establishment, erected on the plans of the architect Philippon, occupies a rectangle, of an area of about 3 acres (11,800 square metres or 14.113 square yards), 4186 yards of which are covered by the buildings. It is bounded by the Boulevard des Invalides, the Rue de Sèvres, the Rue Duroc, and the Rue Masseran. In the centre of the entrance court stands a group, executed by Badiou, representing the founder of the school trying his method on young Le Sueur; the fronton of the building, erected by Jouffroy, represents Hauy, inspired by Charity, presiding over the works of blind children.

The buildings consist of a central edifice, devoted to the general services, and two side wings symmetrically opposed, that on the right being reserved to the boys, and that on the left being for the use of the girls.

Two distinct pavilions, which occupy together an area of 766 square yards, are appropriated to the professors' rooms. The ground floor of these pavilions forms in each ward a large covered yard or playground resorted to by the pupils in bad weather.

The chapel and the concert-room (salle des exercices publics) occupy the first and second floors of the central building, and may be connected or separated at will by means of wide doors. The choir and cupola of the chapel have been painted by Lehmann.

The premises are well arranged and ventilated; the class-rooms, studies, work-shops, dining-halls, dormitories, and infirmaries are commodious, and heated by hot-water and hot-air pipes.

A large open play-ground, planted in the form of a quincux, joins each ward.

A bath-room, containing thirty ordinary baths and provided with shower-baths, enables all pupils to bathe at least once in a fortnight.

Besides the organs for practice in each ward, the School possesses a grand organ, built by Cavaillé Coll, consisting of thirty-six stops, three rows of keys, &c., which is placed in the Concert-room (salle des exercices publics). It is used for the higher studies, for public worship and for organ recitals.

There are, in the Boys' Department, workshops, in which boys are taught turning wood, reseating chairs with cane or rush, tuning and repairing pianos.

In the Girls' Department there is a workshop in which they are taught fancy work, needle-work, crochet, &c.

The School possesses also a printing-press, which issues a great many works (literature or music) for the use of the blind.

The Library contains 250 volumes in embossed print and 1400 volumes for the use of ordinary people.

The School receives 150 boys and 80 girls, and is under the jurisdiction of the Ministry of the Interior (Home Office).

The Director is assisted in the superintendence of education and teaching in the Boys' Department, by a Censor of Studies (Censeur), in the Girls' Department, by a Lady Superintendent.

A Chaplain conducts the services in the chapel and imparts the religious instruction. Due regard is paid to the conscience clause. Children of other denominations recognised by the State, receive their religious instruction from their own ministers.

The medical service is represented by a physician in ordinary, by several consulting physicians, by a consulting surgeon, a surgeon oculist, and a surgeon dentist.

Pupils are received in the school from ten to thirteen years of age. The course of studies lasts eight years, which period, under exceptional circumstances, may be either lengthened or shortened.

The boarding and tuition fees are £40 per annum. A number of scholarships are attached to the School.

The Institution is at once a Secondary and a Technical School, which, while imparting to the pupils the knowledge capable of raising their minds and maturing their intellect, provides them with a trade or a profession which will render them independent. The Institution is moreover a training college for its own professors, to whom it grants the degrees.

Amongst some of the eminent past students of the School, let us mention Rodenbach, who from 1832 to 1869 fulfilled in Belgium the duties of a burgomaster and of a deputy (member of Parliament); Penjon, a laureate of the competition between the College of Paris and Versailles, a Knight of the Legion of Honour, and professor of mathematics at the College of Angers; Gauthier and Roussel, both professors at the Institution, and eminent composers of music, &c., &c. (*Room No.* 11.)

1545. INSTITUTO PRINCIPE DI NAPOLI PEI GIOVANNI CIEGHI D'AMBO I SESSI (Institute for Blind Children of Both Sexes, Naples).—(1) Objects for Teaching; Specimens of Collection. (2) Complete Method, "Martuscelli System," of te ching the blind the form of letters and numbers. Apparatus to guide him to write with chalk, "Falda-iga" carved (3) Metallic Pen and Specimens of Writing in freehand without any help of the apparatus. Literary and Medical Instruction. (4) Books and Geographical Maps printed in the

Institution. (5) Productions of Works done in the Institution: Printing and Binding, Blinds and Matting, Baskets of all sorts, Carpentry, Turnery, Bootmaking, and Domestic Utensils. (*Room No.* 11.)

1546. **ROYAL BLIND SCHOOL, Copenhagen. (J. MOLDENHAWER, Director).**—There are 97 pupils, and room for 100. All pupils are above the age of 10 years. For the younger ones there is a preparatory school (infant school). All blind children in Denmark may be educated in the Royal Blind School. The teaching of shoemaking gives good results, and is very little practised elsewhere in the education of the blind. The other handicrafts taught give as good results, viz., basket-making, ropemaking, and brushmaking. The piano, violin and organ; and singing, harmony, and tuning are taught, and much use is made of the Braille system. Amongst the handicrafts of the girls ought to be mentioned the sewing by hand and by machine. The school has 6 classes, with an average number of 27 lessons each per week. We have much drilling, for boys and for girls separately. There is a printing shop for books, music and maps. (*Room No.* 11.)

1547. **INSTITUTION FOR THE BLIND, Amsterdam. (J. H. MEIJER, Superintendent.)**—If the boys and girls of the Blind Institution at Amsterdam venture to take an active, although at the same time a very humble, part in the present Exhibition, it is only to show to the world how a good education is of the highest importance to the blind, as by its aid many will succeed in life who, without it, would have been helpless, unhappy, and a burden to themselves, their friends, or society. A closer union between the educated blind of different countries and parts of the world is already bringing the happiest results, in disseminating information, cheapening and simplifying educational apparatus, and thereby promoting the happiness and well-being of the blind throughout the civilized world. They know that the brilliant example set by the late Mr. Gardner has met with universal approval, and they hope that it will find many followers all over the world. The blind are best provided for not by receiving alms, but by a sound education and a good course of honest labour. This Institution was established in 1808 by the Dutch Freemasons, who continue to support it, although it has long been entirely independent of their Brotherhood, as is the newly founded infant school for the Blind at Bennekom, which is under the patronage of H.R.H. the Crown Prince, and may be considered as a preparatory school in the country. The latter, which is called Prince Alexander's Foundation, has 12, and the institution 62, pupils of both sexes and of every religious sect. Pupils can be received into the Institution from the age of 6 years, and remain there till the age of 18. They are taught, besides the ordinary school subjects: *Religion*, "*Braille*," and different methods of *flat writing*, systems of *Guldberg*, *Foucaud*, *Hebold*, *Kleyn*, *French* and *German*, *piano* and *organ playing*, *piano tuning*, *basket* and *brush making*, *caning*, *matting*, *knitting*, *knotting*, *fancy needlework*, *silver* and *copper wire twisting*, &c. Connected with the Institution is an Asylum for honourably dismissed pupils, and for grown-up blind people, admitted under 30 years of age. It provides for 28 male and 32 female inmates. Both these establishments are in private hands, and are supported only by voluntary contributions, legacies, &c.—J. H. MEIJER.

The exhibit of Capt. *L. Schuytkorver*, Royal Dutch Navy, Knight of the King William Order, a writing apparatus for grown up people who have lost their sight at an advanced age, is sent in his own account. He is blind, and invented it himself. (*No.* 16.)

APPARATUS AND EXAMPLES FOR TEACHING. (1) Specimen of raised types for embossed printing. Teaching elementary reading, musical composition, cyphers, &c. (2) A case containing a progressive series of embossed reading books, beginning with a primer and ending with French and German reading-books for the highest class of pupils. (3) An Album with various proofs of dotted and flat writing according to the systems of "*Braille*," "*Foucaud*," "*Hebold*," "*Guldberg*," and "*Kleyn*." (4) A set of Metallic Raised Letters for teaching the elements of reading. (5) Specimen of Embossed Printing, from the Institution's own Press. Three cases. Teachers of Blind Institutions may ask for a copy. (6) Specimen of Dotted and Flat Writing, Embossed Printing, &c., on cards. (7) A "Braille" Writing Frame, French. (8) A "Foucaud" Writing Frame, French. (9) A "Guldberg" Writing Frame, Danish. (10) A Board for Elementary Mathematical Instruction. (11) A Reading-Book on the "Braille" System. (12) A Reading-Book on the "Moon" System. (13) A Raised Map for Teaching Geography (invented by J. H. Meijer). (14) Two Raised Maps for Teaching Classical Geography (published in England). (15) Two Frames for the Ordinary Flat-Writing, to be used by persons who have lost their sight in advanced life, invented and constructed during his blindness by the late Major G. P. Serraris, Bart. (16) A Frame for the Ordinary Flat-Writing, to be used by persons who have lost their sight in advanced life, invented by L. Schuytkorver (K.M.W.O.) Capt. Royal Dutch Navy, retired (blind). Constructed by Mr. Torner, at Sneek, Friesland. (17) Typhlographe (Belgian). (18) Portable Braille Frame, invented by the late Superintendent, Mr. Pablasek, of Vienna.

SPECIMENS OF SCHOOL WORK.—BOYS.

(*a*) Two Game-bags of knotted rope, one with I.H.E., 1884, worked into it, and another plainer. (*b*) Two Brushes with I.H.E. and 1884 worked into them. (*c*) One Plain Brush

(hair). (*d*) One Plain Brush (sparte). (*e*) One Hearth Brush (coloured hair). (*f*) Four Samples of Chair-caning. (*g*) Two Lined Knife-Baskets. (*h*) Two Open Worked Flower-baskets. (*i*) One Pic-nic Basket (small). (*k*) One Hamper (large). (*l*) One Open Worked Basket. (*m*) One Case containing a dozen Pipe-covers, some of them with initials, cyphers, &c., made of silver-wire. (*n*) One Silver Watch-guard. (*o*) A Pair of Snow Slippers (to put round the heel in snowy weather, or on the ice.

SPECIMENS OF SCHOOL-WORK.—GIRLS.

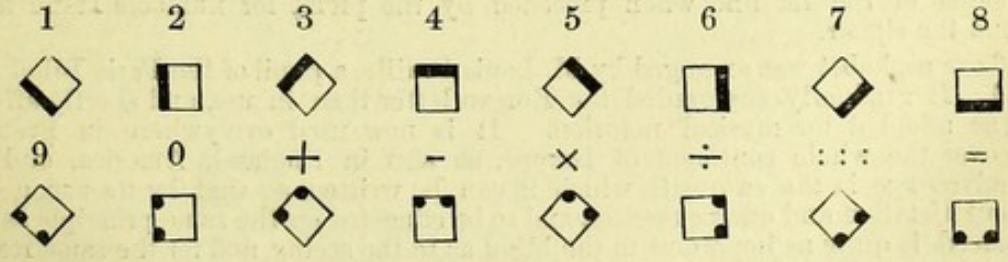
(*a*) One Antimacassar with "Blind Asylum, Amsterdam, 1884" worked into it. (*b*) One Anti-macassar with "Exposition Coloniale, 1883," worked into it. (*c*) One Anti-macassar with "Gezegend Instituut van Nederland" (Blessed Institution of the Netherlands) worked into it. (*d*) One Anti-macassar with "Instituut Amsterdam" worked into it. (*e*) One Anti-macassar with "Philadelphia, Amsterdam, Anno, 1876" worked into it. (*f*) Three Plain Anti-macassars. (*g*) One Cotton Ladies' Night Companion with I.H.E. worked into it. (*h*) One Blue Woollen Shawl. (*i*) Five Various Coloured Woollen, and One Cotton, Lampstand. (*k*) One Pair of Coloured Woollen Baby-shoes. (*l*) Four Silk, and One Thread, Purses. (*m*) Various Specimens of Common knitting. All this work has actually been done by the blind pupils themselves. The one who made the anti-macassars *a*, *c*, and *e*, has both her eyes replaced by a pair of artificial ones. The male-teacher is perfectly blind himself and an honourably-dismissed pupil of the Institution. (*Room No.* 11.)

1548. BRITISH AND FOREIGN BLIND ASSOCIATION (THE), (T. R. ARMITAGE, M.D., Hon. Sec.).

Braille Frame.—This is a frame for enabling the Blind to write embossed characters according to the system of M. Braille. The brass frame contains sets of six pits. The guide is perforated by cells to correspond with them. It is hinged to the left end of the bed by a stud. The paper is laid between the two and the writer uses a steel point which forces the paper into the pits of the bed. The letters consist of raised points variously grouped. This frame is so arranged as to allow the writer to emboss both sides of the paper, thus securing a saving of space and greater clearness to the touch. A sheet of paper of the full size of this board can be embossed by a good writer on both sides in from twenty minutes to half an hour. The advantages gained by this method of writing are—The blind man can easily read what he has written; he can take notes of lectures, books, &c., which can be studied by him at his leisure. Children can be taught to write from dictation and therefore to become good spellers.

Embossed Maps.—Where the land meets the sea it is slightly, but sharply raised, and forms as it were a perpendicular cliff. The rivers are marked by depressions, the right bank in every case being perpendicular, the left bank shelving. In the physical maps the hills and mountains are marked with a sufficiently near approach to truth to give a very accurate idea of the configuration of the country. The maps are numbered according to the Braille system, and the towns are either in association with these or form part of the number, the top back dot standing for the town. Numbering these maps according to the Braille method, has made it possible to convey, without confusion, an amount of embossed information, which has never been attempted before, as most of the important towns are referred to in an explanatory index. The headlands, inlets, and rivers are numbered on the sea at a uniform distance of half-an-inch from the coast, which allows the finger of the blind person to sweep freely round the coast, while the information respecting each prominent feature is always close at hand.

Arithmetic Board.—The arithmetic board sold by the Association has eight-sided openings into which four-sided pins fit, having a plain ridge on one end, and two points on the other, thus eight positions of the pin can be obtained with the plain ridge uppermost, and by reversing the pin, eight more positions with the points uppermost, as will be seen by the following diagram.



Opening in the board for the reception of the pins.

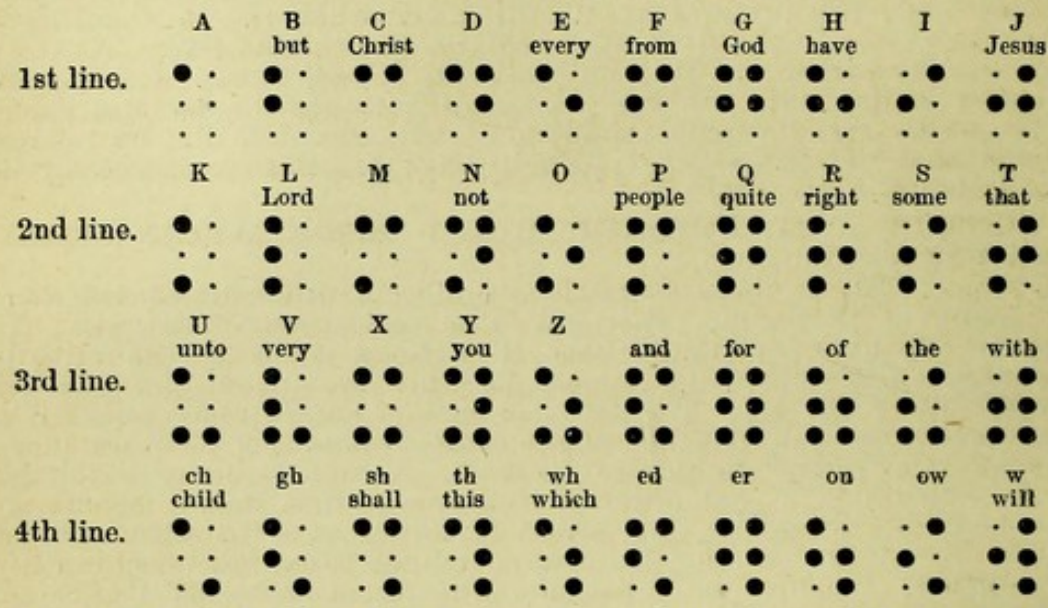
Directions for Use.—The pins are square and the holes in the board into which they fit have

eight angles, so that each pin can be placed in eight different positions, and by reversing it, eight more can be obtained. The numerals up to 8, are formed by the end on which the ridge is situated; then the pin is reversed and the remaining signs obtained by the end on which the points are placed. By this arrangement the signs in most frequent use are represented by the ridge, which is more pleasant to the finger than the points.

Pencil Cards.—These cards are intended to enable a blind person to write with a pencil. The paper is placed on the card, the ridges of which can be easily felt through the paper, and enable the writer to keep his lines straight.

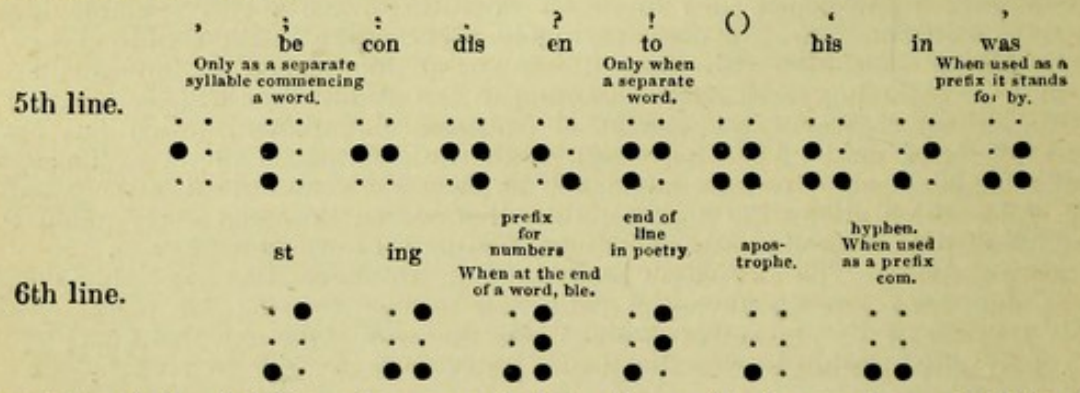
The Braille Alphabet, with Contractions.

The large dots represent the raised points of the Braille letter; the small simply serve to indicate their position in the group of six.



The signs of the 2nd, 3rd, and 4th lines are formed from those of the 1st by the addition of lower dots.

The signs of the 5th line are the same as those of the 1st, except that they are written in the middle and lower holes.



The signs of the 1st line when preceded by the prefix for numbers stand for the nine numbers and the cipher.

The above alphabet was arranged by M. Louis Braille, a pupil of the Paris Blind Institution, about 1834. It gradually superseded the Roman letter then in use, and shortly after its introduction was adopted for musical notation. It is now used everywhere in France, and is employed over the whole continent of Europe, as also in England, America, and Australia. Its great advantage is the ease with which it can be written, so that by its use a blind child can write out dictation and other exercises, and so be educated on the same principle as the seeing. Writing, indeed, is quite as important to the blind as to the seeing, and for the same reasons. The system is easy to read, and occupies a comparately small space.

Interlining Frame.

Directions for Using the Interlining Frame.—The width of the board is the gauge of the paper, but as writing which is to be bound ought to have a wider margin than that obtained by paper exactly the width of the board, it is desirable to double over the right hand edge of the paper to the extent of about a quarter of an inch, in such a way that the paper with its edge

so turned down shall be exactly the width of the board. Now raise the clip at the upper edge of the board, lay the paper with its edges flush to the edges of the board and with its upper edge against the top. Close the clip which fixes the paper on the pins. Enter the brass frame with its studs in the holes nearest the clip, so that the paper lies between the guide and bed; now write the first two lines and shift the brass frame for each successive two lines until the first page is written. Open the clip, remove the paper and replace it with its embossed side next the writer, placing the burrs formed by the upper clip pins on the pins projecting from the board. This will bring the whole sheet one line lower. Now close the clip, enter the frame as before and write the second page. When this is done it will be found that the lines of the second page fall into the intervals of those of the first. By this method wide intervals are obtained between the lines which make reading more easy, while about 20 per cent. in space is saved.

"Progress," an embossed magazine for the blind, is published by the British and Foreign Blind Association for Promoting the Education and Employment of the Blind, 33, Cambridge Square, London, W., and is edited by Dr. T. R. Armitage, the honorary secretary of that association. It is in the Braille type, which is a character consisting of raised points, now used very largely by the blind in most civilised countries. The objects of the magazine are to present the blind with information likely to be specially interesting to them, and also to give short articles of general interest. (*Room No.* 11.)

1549. **ASYLUM FOR THE BLIND, Glasgow.**—I. By Workers in the Manufacturing Department:—1st. Two Soiled Linen Baskets, with perforated bottoms containing disinfectants. 2nd. Invalid Bed Rest, as supplied to hospitals. 3rd. Bassinette of an improved construction, with Baby-linen basket attached. 4th. Improved Travelling Hamper. II. By Inmates of the Institution:—1st. Lace Knitted Goods. 2nd. Shetland Goods. 3rd. Silk Goods. 4th. Netted Goods. 5th. Ordinary Knitted Goods. Class 1st is the most difficult, and is confined to a few of the female inmates. Classes 2nd, 3rd, and 4th employ a much larger number of inmates. Class 5th is more easily learnt, and, as circumstances demand, any number of the female inmates may be employed in it. A ready market is found for the articles manufactured, but the price realized is not commensurate with the cost of production. The class of work most interesting to visitors is probably that connected with the manufacture of lace goods, not only in respect of the amount of patient labour required, but also of the beauty, intricacy and regularity of the pieces manufactured. The knitting and netting are taught by the Matron, an Assistant and a blind female inmate. The method employed is to place the fingers in the proper position, and to guide them till the pupil understands the art. (*Room No.* 11.)

1550. **ROYAL NORMAL COLLEGE & ACADEMY OF MUSIC FOR THE BLIND, Upper Norwood, S.E.** — The specimens in this exhibit have been made without exception by the blind children in the primary school of the Royal Normal College. These children entered school November 1, 1882; exclusive of vacations, they have had 15 months' instruction. Kindergarten work and modelling in clay, besides developing the faculties of the mind of blind children, cultivates and refines their touch, and gives that facility in the delicate use of their fingers which is essential in future work, especially for the modern technique required for the skilful performance on the pianoforte, organ, or other musical instrument. The preparatory school is conducted on the Kindergarten system. Fröbel's principle of self-work and self-help is far more essential in the training of blind than of seeing children. Special care is given to the moral, mental, and physical training of the children, and as a foundation for all their future work, orderly habits, good manners, and upright conduct are inculcated. Besides Kindergarten work, the instruction includes reading, writing, arithmetic, and object lessons in the elements of various subjects. (*Room No.* 11.)

1551. **RHENISH PROVINCIAL INSTITUTION FOR THE BLIND, Düren, Prussia (Director, Prof. MECKER).**—(1) Description of the Institution, by Prof. Mecker. (2) Rules and Regulations. (3) Periodical for the Blind, edited and published by Prof. Mecker, being the only technical paper for the blind published in Germany. (4) Apparatus used for Instruction. (5) Games and Amusements for the Blind. (6) Specimens of Work done in the Institution.

Class LVI.

Collective Displays of School Work Appliances.

1556.* **EDINBURGH SCHOOL BOARD, 25, South Castle Street.**

(1) Model in Wood of North Merchiston Public School.—Robert Wilson, *Architect.*

Accommodation.—Juveniles, 10 square feet per child, 711; infants, 9 square feet per child, 258; total, 969. Area of site, 1940 square yards. Total cost of buildings, including janitor's house, £8,152. The cost of school buildings, exclusive of janitor's house, is at the rate of £7 19s. 7d. per child, calculated at the 10 and 9 square feet limit. The cost is at the rate of £6 11s. per child, if the calculation be made upon the 8 square feet limit. This is a mixed school, boys and girls being taught together. The infant department is placed on the ground floor, and the juvenile department on the upper floor. On the ground floor there are the infant

hall or school room and two class rooms entering from it. There are two other class rooms, which may be used either with the infant department or with the juvenile department; also the sewing room, communicating with the girls' staircase, this room being fitted with presses and wash-hand basins. The upper floor is reached by two staircases—one for boys, with an entrance from the front street, and one for girls, with an entrance from the side street. On the upper floor there are the central hall or school room, and seven smaller class rooms, with glass doors communicating between them. The rooms have also doors into the corridors. Cloak rooms, fitted with wash-hand basins, are provided for boys, girls, and infants.

Ventilation.—Ventilation for the different rooms is provided by shafts 6 feet high for the admission of fresh air, and openings in the ceilings for the removal of the vitiated air communicating with shafts carried to ventilators on the roof; in the case of the rooms on the ground floor the openings in the ceilings communicate with flues in the walls.

Heating.—The rooms are fitted with the patent Manchester grates, which, besides having an open fire, are provided with a heating chamber, into which fresh air is taken, heated, and sent into the rooms through a grating placed over the fire-place.

Drains.—The drain-pipes are ventilated by a "Buchan trap" with eye carried to surface, the soil-pipes are carried to the roof as air-pipes, and the soil-pipes from the wash-hand basins are led into open disconnecting traps. Separate playgrounds for boys and girls are provided, each having covered play-sheds and offices for the children. The offices are ventilated by openings in the walls and ventilators on the roof. The playgrounds and offices are laid with "patent Granolithic" pavement. A janitor's or caretaker's house is placed at the end of the boys' play-ground.

This school was open for the first time on September 3rd, 1883, and the average number on the roll for the four weeks ending May 2nd last was 811. The present staff consists of the head-master, mistress of infant department, first assistant, and seven assistants, all of whom are certificated. In addition to these there are the sewing mistress, singing master, and five pupil-teachers. This staff will be considerably increased on the maximum attendance being reached.

Instructions.—In order to see the internal arrangements of Juvenile Department, lift the roof off in four portions:—1. Lift the portion to the right end of front, marked "1." 2. Lift the portion to the left end of front, marked "2." 3. Lift the portion over centre block. 4. Lift the portion over wing to side street. In replacing the roof observe the reverse order, and in replacing the portion over centre block, notice that the end marked "front" is placed to the back of front gable. In order to see the internal arrangements of Infant Department, lift the upper floor away in one piece. In handling the model notice that handkerchiefs or pieces of soft paper are used, so as to prevent finger marks.

(2) Dalry Public School, Plans of—(*a*) Ground plan showing arrangement of class rooms, &c (*b*) Front elevation and section from north to south. (*c*) Block plan of buildings, playground, &c. Infant and Juvenile Departments on ground floor.—W. Hamilton Beattie, *Architect.*

Accommodation.—10 square feet per child for juveniles, 651; 9 square feet per child for infants, 303; total, 954. Cost of school buildings and furnishings £9723, being at the rate of £10 3s. 10d. per child. Area of site 4840 square yards. This school is the only one under the Edinburgh Board which has its entire school accommodation on the ground floor. The average number on the roll for the four weeks ending May 2nd last was 1291. The staff consists of a head-master, infant mistress, first assistant, ten assistants, all of whom are certificated. There are also sewing mistress, singing master and thirteen pupil-teachers.

(3) Canonmills School, Photograph of. Infant Department on ground floor. Juvenile Department on upper floor.—Robert Wilson, *Architect.*

Accommodation.—10 square feet per child for juveniles, 546; 9 square feet per child for infants, 248; total, 794. Cost of school buildings and furnishings £6763, being at the rate of £8 10s. 4d. per child. Area of site, 22 .5 square yards.

The average number on the roll for the four weeks ending May 2nd last was 962. The staff consists of a head-master, infant mistress, first assistant, and six assistants, all of whom are certificated. There are also sewing mistress, singing master, and ten pupil-teachers.

(4) Leith Walk School, two Photographs of. Infant Department on ground floor; Juvenile Department on upper floor.—W. Lambie Moffat, *Architect.*

Accommodation.—10 square feet per child for juveniles, 572; 9 square feet per child for infants, 289; Total 861. Cost of school buildings and furnishings £13,966, being at the rate of £16 4s. 4d. per child. Area of site, 6322 square yards. This school has the largest area of any of the elementary schools under the management of the board, being nearly $1\frac{1}{3}$ acres in extent.

The average number on the roll for the four weeks ending 2nd May last was 1189. The staff consists of a head master, infant mistress, first assistant and eight assistants, all of whom are certificated. There are also a sewing mistress, singing master, and thirteen pupil-teachers.

(5) Lothian Road Public School, Photograph of. Infant Department on ground floor, Juvenile Department on 1st and 2nd floors.—Robert Wilson, *Architect.*

Accommodation.—10 square feet per child for juveniles, 545; 9 square feet per child for infants, 280; total, 825. Cost of school buildings and furnishings, £7334, being at the rate of £8 17s. 9d. per child. Area of site, 1350 square yards. This school consists of ground and first and second floors.

The average number on the roll for the four weeks ending 2nd May last, was 1187. The staff consists of a head master, infant mistress, first assistant, and eight assistants, all of whom are certificated. There are also a sewing mistress, singing master, and twelve pupil teachers.

(6) Stockbridge Public School, Photograph of. Infant Department on ground floor; Juvenile Department on upper floor.—R. Rowand Anderson, LL.D., *Architect.*

Accommodation.—10 square feet per child for juveniles, 371; 9 square feet per child for infants, 252; total, 603. Cost of school buildings and furnishings £9042, being at the rate of £14 19s. 10d. per child. Area of site, 2681 square yards.

The average number on the roll for the four weeks ended 2nd May last was 835. The staff consists of a head master and infant mistress, first assistant and four assistants, all of whom are certificated. There are also a sewing mistress, singing master, and nine pupil teachers. In connection with this school an extensive gymnasium has been erected and fitted up by the Board, in which the pupils of the higher standards of all the schools (male and female) receive regular courses of lessons in gymnastics and calisthenics. The gymnasium is also open on Saturday afternoons to the pupil teachers (male and female), who also receive courses of lessons in gymnastics and calisthenics from regular qualified instructors.

(7) Warrender Park School, Photographs of—(*a*) Exterior of, (*b*) Interior views. Infant Department on ground floor; Juvenile Department on upper floor.—Robert Wilson, *Architect.*

Accommodation.—10 square feet per child for juveniles, 626; 9 square feet per child for infants, 254; total, 880. Cost of school buildings and furnishings, £8866, being at the rate of £10 1s. 6d. per child. Area of site, 1912 square yards.

This school is the only one under the management of the Board in which any pupil has to pay as high a fee as ninepence a week; the highest fee per week charged in any of the other schools being sixpence a week. In this school pupils have an opportunity of continuing their studies far beyond the standard work, and of receiving such higher training as may fit them for entering the University. In addition to all the ordinary subjects of instruction the following are taught daily, viz. Latin, Greek, French, and German. The school was opened for the first time on the 3rd September, 1883, and the average number on the roll for the four weeks ended 2nd May last was 695. The present staff consists of a head master, infant mistress, first assistant, and six assistants, all of whom are certificated. There are also a sewing mistress, singing master and seven pupil teachers. Two of the latter have finished their apprenticeship and have been continued by the Board for another year. The staff will be largely increased when the maximum attendance is reached.

In the elementary schools the fee includes the cost of school books, which are supplied by the Board.

(8) Royal High School. Two Photographs of—(*a*) One from the south-east, (*b*) one from the south-west. This is the only secondary school under the management of the Edinburgh School Board. The High School originally stood in the Old Town, near the site of the old infirmary, and was rebuilt on nearly the same spot in 1777. Shortly after the beginning of the present century, a change of situation being loudly called for, owing to the great extension of the City towards the north, and the rapidly increasing number of pupils, the Town-Council, with praiseworthy zeal, at once took steps to meet the requirements of the community. The present structure, which stands on the south slope of the Carlton Hill, was designed by Thomas Hamilton, a pupil of the school. It was founded in 1825, and completed in 1829, at a cost of £30,000. The length of the main building is 270 feet, being 15 feet longer than the principal front of the University, but if the class-rooms on the right, and Janitor's or Caretaker's house on the left of the accompanying photograph be included, there is an architectural composition extending upwards of 400 feet. The central portico is hexastyle, and having a double row of columns, projects considerably in front of the general façade. The distinctive feature of the building is of the purest Doric, the general proportions and most minute details of the Temple of Theseus having been closely adhered to. The peristyles, each consisting of six smaller Doric columns with corresponding entablatures, extend from the great portico to the extreme compartments of the building at each end. The columns amount to twenty-eight in number, those of the portico being upwards of 20 feet in height. The leading features of the extreme portions of the main building are derived from the monument of Thrasyllus, having the antae and entablature somewhat similar, but without the strict adherence to the proportions of the original which has been observed in the portico. The principal room in the edifice is the hall, which occupies the centre, and is 75 feet by 43, and upwards of 30 feet high. The building and playground occupy an extent of two acres, and command one of the most picturesque views in the city. The date of the foundation of the High School is unknown, but it appears to have existed as early as the beginning of the twelfth century. From that time to the Reformation, the "Grammar School of Edinburgh," as it was then called, was under the control of the canons of the abbey of Holyrood. In 1598, by the enlightened zeal of the clergy and town-council, it

was established on a more comprehensive plan; and, from the special patronage vouchsafed to it by James VI., it received the name which it still bears—*Schola Regia Edinburgensis.* For upwards of three centuries the school was managed by the town-council. In August, 1872, the Education Act transferred it, as one of the higher class public schools, to the management of the Edinburgh School Board. It has long been at the head of the great schools of Scotland. In the roll of its scholars are the names of some of the most distinguished men of all professions, and who have filled important situations in all parts of the world; and it is worthy of note that it contains the names of three Lord Chancellors of England—natives of Edinburgh—Alexander Wedderburn, First Earl of Rosslyn, Thomas Erskine, and Lord Brougham. The school provides boys with a liberal and useful education, qualifying them for the Universities, for Civil Service and other appointments, and for professional or commercial pursuits. The course of instruction includes the English, Latin, Greek, French, and German languages; mathematics pure and applied; arithmetic, writing, book-keeping; geography and history, ancient and modern, the elements of natural science; drawing, fencing, gymnastics, Hindustani, and shorthand. All the pupils have access to the school library, which contains nearly 10,000 volumes. For further particulars see Prospectus, and Steven's 'History of the High School.' For detailed account of instruction, &c., given in this school see prospectus for 1884–85, to be had in Exhibition. (*Room No.* 1.)

1557. **SCHOOL BOARD OF GLASGOW.**—(1) The Explicit Map of Scotland and Lanarkshire. This map has been designed to teach large classes with greater comfort and success than could be obtained by studying small maps, crowded with an amount of information which perplexes the eyes of body and mind. One thing at the time is the idea intended to be carried out. For example: counties and towns, rivers and towns, railways and towns, &c., &c., are shown separately. The bold lines, bright colouring, great size and consequent clearness enable pupils to study geography with a pleasure otherwise unattainable. The map has been designed by Mr. John Donald, the Head-master of Dennistoun Public School, belonging to the School Board of Glasgow. (2) Ball Frame. This ball frame differs from all others in being larger and more durable. In the ordinary ones the wires become very easily bent, and present to the young eyes a very uneducative object in the shape of a crooked line, and the balls being of diminutive size are easily split and the numbers become incorrect. The ball frames in a great many catalogues contain only ten balls, which make an awkward total. This one, with twelve balls in twelve lines, contains the ordinary multiplication table. The ordinary ones, standing on one stand only, are top-heavy and easily capsized, and are awkward pieces of furniture in an infant school. With a bright, intelligent teacher to use the ball frame it is a most useful object to fix numbers in the young mind, which finds great difficulty in grasping "abstract numbers." The ball frame has been designed by the Rev. Cuthbert Wood, one of the members of the School Board of Glasgow, and is used in all the schools under that board. (3) Reading, Writing, and Arithmetic Frame. The mixed "Reading, Writing and Arithmetic Frame" is, as it name implies, used in teaching these subjects. On one side is a ground glass surface for writing and arithmetic, and on the other side, by the turning of a handle, there is brought under the view of the class a succession of graded reading lessons. This apparatus is very convenient, as it contains within itself all that is necessary for teaching the above subjects to infants at this stage. It is specially useful for large classes; 150 have been taught at once. The reading lessons are printed by Messrs. Blackie and Sons, 49 and 50 Old Bailey, London, E.C., and are intended to be used in connection with the corresponding book issued by these publishers. These are the largest reading sheets yet produced, and the following advantages are claimed for them:—1. They are beautifully illustrated, and thus at once attract the attention of children. 2. They are printed in letters so large that pupils seated at a distance can easily follow each word, and readily keep the place in the lesson. 3 They are a means of greatly economising the teacher's time in dealing with large classes. 4. They promote discipline, inasmuch as the children are simultaneously engaged in the same work. 5. They will be found an excellent aid to fluent reading, from the rapidity and ease with which the pupils are taught to gather up words into phrases and sentences by merely watching the motion of the teacher's pointer. 6. The large size and clearness of the letters prevent the straining of the eyesight. This is an advantage the publishers desire to bring prominently before teachers, as it is a very important feature. This frame has been designed by Mr. John Donald, the Head-master of Dennistoun Public School, belonging to the School Board of Glasgow, and is used in the schools under that board. (4) Model of Gorbals School. This is a model of a mixed school, in course of erection, situated at the corner of Clyde Place and Buchan Street, with a frontage also to Kirk Street. The principal façade faces Clyde Place and overlooks the river. The external walls are all built of freestone, and the interior walls of brick. The class-rooms are all heated throughout by means of hot water pipes, and so arranged that each room can be heated separately irrespective of the adjoining class-rooms or school-rooms. The fresh air inlets are all from the outside walls, connected by conduits to coils of pipes under stages. These stages are perforated next walls, having iron grating set into floors as a means of exit for the fresh heated air. Close to the ceiling there are openings into flues having fire-clay linings, which flues are carried up into chimney stalks standing

12 inches above line of ridge of roof. On each of these flues will be placed one of Munn's Patent Ventilators as a means of extracting the vitiated air. On the ground floor accommodation is provided for the infant and initiatory departments, as well as cloak-rooms, lavatories, and private rooms for head-master and mistress. A special additional entrance is provided for the infants, so that they will have direct means of communication with the playground. On the first floor accommodation is provided for the juvenile and senior departments, and the second or upper floor will be utilised for drawing-class rooms, modelling rooms, &c. One of the greatest difficulties to contend with in a mixed school of this capacity is to adapt an arrangement of stair so that the different sexes may pass from their several class-rooms and school-rooms direct to their respective playgrounds without coming in contact or mixing with each other. This has been overcome by the arrangement adopted for this school, as will be seen by reference to model. Each of the sexes have separate stairs, so that there are no means of intercommunication save in their respective class-rooms. In the entresol, over boys' entrance, private rooms are provided for the assistant teachers. The girls and infants enter from Clyde Place, and the boys from Kirk Street, each having separate playgrounds and latrines. The school provides accommodation for 314 infants at 8 sq. ft per scholar, and 896 boys and girls at 10 sq. ft. per scholar, with drawing class-room accommodation for 242 scholars at 20 sq. ft. per scholar, thus providing accommodation for 1452 scholars. The architect for the school is Mr. Henry Higgins, Junr., 252 West George Street, Glasgow; and the maker of the model, Mr. John Baxter, joiner, 20 Catherine Street (off Parliamentary Road), Glasgow.—(*Room No.* 1.)

1558. **BIRMINGHAM SCHOOL BOARD.**—Model of Board School Building in Foundry Road Birmingham. This model shows a complete set of school buildings on the class room system, which system has now been entirely adopted by the Birmingham School Board. In the earliest days of the Board, when much of the instruction was given by pupil teachers, the rooms for each school department consisted of one very large room, with two, or at the most three, small class rooms. Subsequently the employment of more adult assistant teachers led the Board to provide a greater number of class rooms, which were separated from the principal rooms by glazed partitions. Continued experience has led the Board to the conclusion that large classes in large town schools ought to be taught as far as possible by adults, and that young apprentices ought rather to be employed with a view to learning their profession efficiently, hence the tendency has been to provide more class-rooms, and in the older schools the large rooms have now been divided by means of revolving shutter screens. In this way all the schools are worked to a large extent on the class-room principle. The newer schools provide separate class-rooms for all the classes, and also a large central hall which is used for assembling the whole school together, and also for examination purposes and for parents' meetings, &c. It is believed that the supervision of such a school is most complete when all the rooms are on the ground floor, and the model now exhibited is of a school arranged on that plan. This arrangement, however, is possible only in neighbourhoods where the land is comparatively cheap. In densely populated districts, where sites are costly, the Board has been compelled to arrange the class-rooms on two levels, the upper rooms being reached by means of a light gallery running round the Central Hall. The cost of one of these sets of buildings, including the Central Hall, is generally about £10 per head. This of course does not include the cost of the site, which necessarily varies according to situation. It provides 10 square feet of area for every child above the infants, and 8 square feet per child for the infants. The central hall is not counted in the accommodation. The exact amount of the builder's contract for the school in the Foundry Road was £9390, and the total cost, including furniture and fittings, architect's commission, clerk of the works, tar-paving of extensive playgrounds, and all other incidentals was £10,685. The large hall measures 77 feet 6 inches by 30 feet, the class-rooms are each 25 feet 6 inches by 23 feet 6 inches, and the large room for the infants is 46 feet 9 inches by 30 feet. The floor of the large hall is composed of blocks of wood laid on a bed of concrete, and caulked with a mixture of tar and tow. The class rooms are boarded in the usual way. Dual desks are provided, the floor being stepped in some of the class-rooms and flat in others.

Raised Plan of the Site of the Borough of Birmingham. In order to inculcate clear notions of the elementary principles of physical geography, it was considered most desirable that the scholars should be made to understand the general features of their own town, with its various elevations, water courses, &c. For this purpose a plaster cast was carefully prepared by a student of the Birmingham School of Art, from the contour lines furnished by the Borough Surveyor. Other casts were easily taken from the first one, and having been painted so as to show the principal streets, the lines of railway, the most important public buildings, the parks, streams, and reservoirs, the children are enabled to gain a much better knowledge of the geography of Birmingham than they could obtain by any other means. They are also led to use their reason in reference to the physical features of other districts, and to understand maps much more intelligently. One of these casts is provided for every school, and a map of the Borough is also furnished with each, so that the scholars may study the two together.

Exhibits illustrating the teaching of Elementary Science by means of experimental lectures. This is accomplished by an itinerant system of science teaching, as follows: The Board

appointed, in June 1880, a Science Demonstrator. Three Assistant Demonstrators have since been appointed, and there are also three junior assistants, lads of 15 to 18. The salaries amount to £750 per annum. For this sum the Board is able to secure efficient science instruction for 30 schools, and also instruction to assistants and pupil teachers in evening classes. Mechanics is taught to the boys, and domestic economy to the girls. Six of the boys' schools also take Magnetism and Electricity, and one Animal Physiology. Three girls' schools also take Physiology as a second specific subject. A wide interpretation has been given to these terms; thus under the head of Domestic Economy as much Chemistry and Physiology are taught as will enable an intelligent girl to comprehend the familiar facts of house life. About £400 has been expended in the purchase of apparatus. This is kept at the Science Laboratory, a building erected at a cost of £1450, in connection with the Icknield Street Board School. Here all the apparatus necessary for the experiments is prepared and packed in boxes which fit into light handcarts. In these the apparatus is carried round from school to school, two teachers and two assistants accompanying each handcart. In each school department a tressel table is kept for the purpose of the Science Lessons. On reaching the school, the junior assistants carry in the boxes, unpack the articles and place them on the tables, and the lesson goes on simultaneously in the boys' and girls' schools. In this way one set of apparatus serves for 30 schools, and each Science Teacher can visit four departments per day, giving a lesson of 45 minutes' duration in each school. A Demonstrator (or one of his assistants) visits each class once a fortnight, and in the interval each class teacher (who has been present at the lesson) gives a recapitulation of it to his scholars. An examination is worked on the subject matter of each lesson, and the papers worked are submitted to the Demonstrator at his next visit. Thus systematic and continuous teaching by a specialist is secured, the teaching is practical, and every fact or law is demonstrated experimentally. Nearly 5000 children come under the influence of this method of teaching science, and the pleasure and profit derived by them have been so evident as to disarm all criticisms adverse to the introduction of Elementary Science into Board Schools. Science Classes for Pupil Teachers and Uncertificated Assistants in Physiography, Magnetism, and Electricity, and Chemistry, are held in the evenings, and are attended by about 300 scholars; the same apparatus is employed as in the day schools. The work is shortly to be extended, by the establishment of a Technical School for Seventh Standard boys. Already about twenty Science Scholarships have been awarded, some of which enable boys to pass on to King Edward's Grammar School and afterwards to the Mason Science College. Testimony has been borne to the value of science teaching given in this manner, not only by teachers and parents, but also by the leading manufacturers of the town.

Models of Apparatus. These are copies of the articles used in the Science Demonstrator's Lessons, and have been made by the boys, at their homes. They are rough in character, but are all serviceable, and are of interest as voluntary efforts, and as showing the vivid impression made by the original objects. They have been made by boys whose ages vary from 11 to 13.

Drawings done by scholars, illustrating the various mechanical powers, the lever, wheel and axle, toothed wheel, pulley, inclined plane, wedge and screw, the steam engine, water pressure, crane, balance, specific gravity apparatus, &c.

Essays and answers to questions upon Mechanics, Magnetism, and Chemistry. The essays embrace such subjects as oxygen, the hydrostatic press, matter, description of a science lesson, &c. In the answers to questions, numerical details relating to the simple machines are worked out.

Essays and Answers to Questions upon Domestic Economy and Physiology (Girls). Essays have been written on the sick-room, health, water, oxygen, gases, carbonaceous foods, selection of clothes, structure of the body, food, ventilation, dress, washing day, exercise, rest and sleep, description of a science lesson, &c.

Apparatus, Diagrams, &c., exhibited by the Science Demonstrator's Department of the Birmingham School Board. 1. Syllabuses of the subjects taught. (*a*) Mechanics, three stages. (*b*) Domestic Economy, three stages. (*c*) Animal Physiology. (*d*) Electricity and Magnetism. 2. Lists of the Apparatus employed for the three stages of (*a*) Mechanics and (*b*) Domestic Economy, shewing the cost of each article. 3. Text Books used. (*a*) Mechanics, by W. J. Harrison, 3 vols. (corresponding with the three stages of the subject), published by Nelson & Sons, 1*s*. each. (*b*) Domestic Economy, by W. J. Harrison, 3 vols., Nelson & Sons, 1*s*. each. 4. Model of the Human Heart, by Anyoux of Paris, employed for the teaching of domestic economy and animal physiology. 5. Sets of Apparatus for teaching (*a*) Elementary Magnetism, 14*s*. (*b*) Frictional Electricity, £2 10*s*. (*c*) Voltaic Electricity, £2. Designed by W. J. Harrison, and made by Morris Bros., Branston Street, Birmingham. 6. Diagrams for teaching domestic economy. (*a*) House in unsanitary condition. (*b*) House with all defects remedied. 7. Photographs illustrating the science teaching carried on in the Birmingham schools. (*a*) Tressel Table placed in front of class, to receive demonstrator's apparatus. (*b*) Three Achromatic Telescopes, used in playgrounds on fine nights. (*c*) Cupboard with glass front and drawers, used as school museum. (*d*) Bi-unial Optical Lantern, cost £50, presented to the board by Messrs. R. and G. Tangye. (*e*) (*f*) Trucks, or Handcarts, with boxes provided to carry the science demonstrator's apparatus from school to school.

Needlework. The system of teaching needlework in the Birmingham Board Schools is a

very thorough and comprehensive one, beginning with the baby class in the infants' department, and finishing with the girls in the 7th standard. Lap bags, marked with the child's name or number, are used to keep all work in, which may be in the course of making. All garments and knitting in both departments are expected to be finished at the end of the school year; the cleanliness, fixing, and cutting of these are made the chief points of merit. The girls above standard 1 receive a certificate from the Board if they have satisfied the above conditions, and work a good specimen on examination day. Special attention is given to cutting out, which is taught by a method of foldings, and the girls in standard 3 and upwards are expected to be able to cut out a garment in paper one-fourth the ordinary size, in the presence of the Board examiner, as part of the examination work. Diagrams of garments in each standard are supplied to the girls' departments by the Board. Demonstration frames are used for the various stitches, and are found of service. In the infants' departments both sewing and knitting are taught to the boys. Every child in both departments works a specimen for H.M. Inspector, which in standard 1 and upwards are fixed by the children themselves. Specimens of work actually done for H.M. Inspectors are exhibited. The pupil teachers' work is reported upon to the Board from time to time, and the assistants are expected to obtain a certificate from the examiner, the conditions of which embrace the giving of a lesson in cutting out.

Specimens of Needlework done by the scholars in the Birmingham Board Schools in the presence of the Inspectress of Needlework and of H.M. Inspector of Schools. No piece of work is exhibited which was not worked in this way at the time of the Government examination.

Model of Revolving Shutter Screen. This particular kind of screen was first made for the Birmingham School Board by Messrs. Hodkinson & Clarke, of Canada Works, Small Heath, Birmingham, and has since been adopted in all the Birmingham Board Schools, excepting only those class-room schools in which such screens are not required. They are found to be cheap, light, and convenient, and can easily be removed.

Cupboard with Revolving Shutter Front. These cupboards, which are supplied by the same firm, are now almost exclusively adopted by the Birmingham School Board. The shutter-front excludes dust and avoids the constant inconvenience of doors, while they are at least as cheap as ordinary cupboards.

Abbott's Arithmetical Ball Frame. This has not been in any sense specially provided for the Birmingham School Boord, but it has been adopted by them, and is found to be much more useful than the arithmetic ball frames previously provided. (*Room No.* 3.)

SCHOOL BOARD FOR LONDON.

GENERAL ARRANGEMENT.

A. School Accommodation of London.
B. School Buildings.
C. School Furniture.
D. Subjects Taught—Books and Apparatus.
E. Miscellaneous Exhibits.
F. Industrial Schools.

A. School Accommodation of London.

The Elementary Education Act of 1870, commonly known as Mr. Forster's Act, laid it down that there should be "provided for every school district a sufficient amount of accommodation in Public Elementary Schools available for all the children resident in such district for whose elementary education efficient and suitable provision was not otherwise made."

For all Boroughs and Parishes outside the Metropolis it remained to be decided, after enquiry by the Education Department, whether School Boards were required or not. But in the case of London the great deficiency of school accommodation was so notorious that a School Board was created by the Act itself.

In the year 1871, that is in the year following the passing of the Elementary Education Act, the number of school places in efficient voluntary schools was 262,259.

At Christmas last the number of school places in efficient voluntary schools was 260,906, and in Board Schools 307,330, i.e. in all 568.236.

Of the accommodation in Board Schools, some was provided in schools which had been transferred to the Board, and some in temporary schools, but the bulk of the accommodation, amounting in all to 284,330 school places, was provided in 277 New Permanent Schools which had been built by the Board.

See Statistical Chart No 1, and School Map of London, No. 2, in Corridor.

B. School Buildings.

Before the date of Mr. Forster's Act, elementary schools throughout the country usually consisted of one large room and a small class-room, or perhaps in some instances two small class-rooms. From the time when the earliest school of the School Board was planned, the Board determined to provide a larger number of class-rooms in each school, in order to ensure more effective teaching. Previously, indeed, schools would appear to have been built by architects

with a view rather to external appearance than perfection of plan and suitability for teaching. One of the earliest schools erected by the Board was entirely on the class-room system, and in recent years the tendency has been more and more in this direction. The size of the class-rooms depends upon the composition of the staff. The Board, generally speaking, have been in the habit of reckoning that an adult teacher can take charge of an average class of 60 children, and a pupil teacher of 30 children. The class rooms, as a rule, accommodate 60 children; but class-rooms have also been arranged for 90 children, so that an adult teacher and a pupil teacher may work side by side. Amongst the later schools regard has also been had to the different numbers of children in different standards, and rooms accommodating other numbers, such as 50 and 70 children, have been introduced. The Board have recently adopted a pupil teachers' scheme, by which pupil teachers in the last two years of apprenticeship may take charge of classes of 40 children as responsible teachers. In future schools of the Board, therefore, it will be necessary to provide class-rooms to accommodate 40 children.

It has always been felt desirable that there should, if possible, be one general assembly room, for religious instruction, collective lessons, music, addresses of head teachers, examinations, &c. The Board have therefore in each of their ten divisions built one or more school or schools with a central or other hall.

Many improvements have been introduced into the later schools, for example: corridors of communication, so that the classes may interchange without noise or confusion: increased cloak-room accommodation, so that each child may have one peg for cap or bonnet and cloak; and, in addition, ample lavatory accommodation has been provided. In all respects the health of the children, as far as possible, has been carefully considered.

In regard to the question of lighting, the rooms are invariably lighted from the left, unless other exigencies of the plan preclude this arrangement. Thus, where it is considered desirable to have three class-rooms in a line in order to be able easily to throw them together, only one room can be lighted from the left, a second being lighted from the right, and a third from the rear.

Another of the improvements consists in warming thoroughly the corridors, so that on the opening of a door during school-hours the difference in temperature fails to cause any sudden blasts of air through the rooms, which would give the children cold, and produce general discomfort. Nor is the important point of warming the cloak-rooms overlooked.

A further and most vital point in connection with the planning of schools is the ventilation, whereby copious draughts of fresh air are admitted into the rooms, and ample arrangements made for the extraction of the foul air. The rooms are thus found singularly fresh and sweet, even at the close of school work. It would be impossible to point out in detail all the various methods used to ensure the constant vivifying influence of fresh air during school hours, seeing that they must necessarily vary under different circumstances; but it must be sufficient to state that the greatest importance is attached to the principle.

The great care exercised in reference to sanitary matters has no doubt had a powerful effect in preventing the Board Schools from becoming the centres of contagion or infection. Still, in spite of this, difficulty is experienced, especially in the closely crowded districts of London. To obviate any danger, a system of disinfectants is used, by which it is believed the children are, as far as possible, protected from disease. Whenever several children are seized with the same disease in a school, it is the practice of the Board to close the building for a few days, and to thoroughly disinfect the whole before re-opening.

In the schools of three storeys the stair-cases are placed at each side of a block of mezzanines consisting, alternately, of cloak rooms and teachers' rooms. In one corner of the block the coal-lift is provided, with access from each floor and a direct communication with the cellar in the basement. All the Board Schools of great height are provided with a lightning conductor.

It has been felt by the Board that a proper playground is absolutely essential, particularly in those parts of London where there are few open spaces. The Board have, consequently, wherever it is possible, secured an adequate site.

The earliest sites purchased by the Board have proved to be insufficient in area, when judged by the light of later experience. While the sites formerly chosen varied from one quarter of an acre to half an acre, it is now no uncommon thing in the outlying portions of the metropolis to find sites ranging from three-quarters of an acre to an acre, and even in rare cases to an acre and a half.

These playgrounds are open not only to children on the roll of the Board Schools, but also to other children in the neighbourhood during good behaviour.

As a general rule, where the space is sufficient, the following gymnastic apparatus is provided:—For the Boys' Department—a giant stride, a set of horizontal bars, and two pairs of parallel bars. For the Girls' and Infants' Departments—two swings and two inclined planes.

A drinking fountain is also provided in each playground.

In voluntary elementary schools there was usually a teacher's residence, and the teacher had charge of the building. It has been felt, however, by the London School Board that in the interest of the teachers it is desirable that they should dwell at some little distance from the place of their work; and the Board have, consequently, in lieu of teachers' residences, built school-keepers' houses.

The average cost per head of the schools of the Board has been as follows:—Purchase of land, including legal and surveyors' charges, £6 0*s.* 9*d.*, Erection of Buildings and Cost of Superintendence, £10 9*s.* 8*d.*; Furniture and Fittings, 10*s.* 8*d.*; Total, £17 1*s.* 1*d.* per child.

Specimens of three schools are exhibited in the cases in the centre of the room.

3. Alton Street, Tower Hamlets. Elevation Model. Observe covered playground for girls on roof.

4. Crawford Street, Camberwell. Model of single storey school; roof removed to show interior arrangements.

5. Carlton Road, Kentish Town. Elevation Model.

6. Carlton Road, Kentish Town. Plan of boys' floor.

C. School Furniture.

(Nos. 7 to 23.) These exhibits will be found in southern part of room.

7 to 11. *Dual Desks.*—The most important articles of school furniture are the scholar's desk and seat. In earlier days the scholars sat in rows, on a long unbacked seat in front of a long desk. The main objection to this arrangement was that the teacher could not have access to the pupil, and that the pupil could not reach or leave his seat without inconvenience to others. Moreover, in this arrangement, the various objects for which the desk has to be used were not sufficiently considered. In the abstract it would appear that the best form of desk would be the single desk; but the objections to this are two-fold: firstly, that a class-room of single desks would necessarily have to be increased in size, and, secondly, the cost would be excessive. When planning their earlier schools, the School Board for London gave careful attention to this question, and had the advantage of the advice of Dr. R. Liebreich, of St. Thomas's Hospital. Ultimately they decided upon the dual desk and seat (*i.e.* a desk and seat for two scholars), of which the following are the main advantages:—The teacher has access to the scholar, and the scholar can leave his seat or return to it without interfering with any other scholar. In the case of the old desk it was necessary, in order that the scholar might stand in his place, that the desk should be at some distance from the seat, the result of which was that the pupil whenever writing was compelled to lean forward, and so contract his chest. In the dual desk, as at present designed, the inner edge of the desk is vertically above the outer edge of the seat, so that the scholar can write without inconvenience. Further, by an arrangement which admits of a part of the desk being turned upwards, the scholar is enabled to stand, without leaving his place. And again, the desk, in consequence of this arrangement, has two different angles; one of 15 degrees in its original position for writing, and the other at a greater angle for resting the books when reading. Moreover the seat is so arranged as to slope upwards from rear to front, and has a rail which fits into the hollow of the scholar's back, thus affording complete rest when the child is sitting and reading or listening to the lessons of his teacher. The desk is also fitted with a shelf for books, and with a recess for slates.

In an ordinary class-room, with accommodation for sixty children, there would be six files and five rows of desks (or, in a square room, five files and six rows); in a class-room for ninety, nine files and five rows, and so on. The desks in the same class-room would naturally be of the same size; but owing to want of space the different rows here are of different sizes, in order to illustrate the desks used for scholars of different ages, *e.g.* No. 7 is for senior scholars and pupil teachers; Nos. 8, 9 and 10 are for younger scholars (Note Card of Desk Drill attached to desks); No. 11 is a Kindergarten Desk and Seat for infants. [See hereafter, D (*m*).]

The other exhibits under the head of School Furniture are as follow:—

12. *Master's Desk, Chair, and Platform.*

13. *Class-Room Cupboard*, to contain reading books, copy books, slates, &c.

13*a*. *School Library Cupboard.* It would be of little use to teach the art of reading, unless a taste for reading were also implanted in the children. In order to encourage this taste, the Board have established libraries from which the children may choose books to read. The schools of the Board are divided into a number of groups. A complete library is allotted to each group. The library is divided into as many sets as there are schools in the group, so that the sets may circulate amongst the various schools. Printed catalogues are provided for each set, and are hung up in the schools. Cards are issued to the children, containing ruled spaces for entering on the one side the book, or books which the child desires to read; and, on the other side, the book borrowed. The books for the school libraries are as far as possible purchased in sheets, and are stoutly bound in waterproof cloth.

Each school is also furnished with a small reference library, for the use of the teachers. A specimen library is shown on the lowest shelf.

13*b*. *Museum Cupboard.*—This is intended to contain collections of natural objects, &c., made principally by the teachers and scholars in their holidays, or at other times, or by gifts from managers. The various objects are used for instruction in object lessons, elementary science lessons, for illustrating reading lessons, &c. [See hereafter, D (*f*) and D (*n*).].

14. *Swing Slate.*

15. *Blackboard and Easel.*

16. *Ground Glass Wall Tablet.*

This exhibit is being tried as an experiment in some of the board schools, as an alternative to the ordinary *swing slate.* The tablet consists of glass, of which the front is ground and the back coloured black. It is believed that the writing upon this tablet can be more clearly seen from all parts of the class-room.

16*a*. Ditto as a Swing Tablet.

17. *Attendance Board,* for registering the attendance of each class at each opening of the school.

17*a*. *Time Table,* setting out the subjects and times of instruction.

18. *Honour Board.*—This is intended as a record of any distinctions obtained by scholars who have been in the school. The board exhibited is about to be placed in the Thomas Street, Limehouse, Girls' School. In connection with this subject, it may be stated that various City Companies and private donors have placed at the disposal of the Board 138 scholarships in all, which is on the average about twelve scholarships a year, since the time when the first scholarship was established in 1873. The object of these scholarships, which, with few exceptions, are open to children in *all* public elementary schools, is to enable children to pass from an elementary school to a school of a higher grade. They are generally tenable for three or four years, and have an average annual value of from £20 to £40 a year.

18*a*. *List of Scholarships* placed at the disposal of the Board.

19. *Ink-well Cupboard.*—Each tray is numbered, and is assigned to a particular class.

19*a*. *Filter.*

The four following exhibits are hung up in all the schools of the Board :—

20. *Sections 7 and 14 of the Elementary Education Act of* 1870, which define a Public Elementary School and a Board School.

21. *Regulations of the Board in regard to Bible instruction and religious observances.*

22. *Regulations of the Board in regard to infectious diseases.*

23. *Duties of School-keepers.*

24. *Eight-day Clock.*

D. Subjects Taught—Books and Apparatus.

The subjects taught in the London Board Schools are confined, with the exception of the instruction of the Blind and of Deaf Mutes, to the subjects specifically recognised by the Elementary Education Acts, and by the Government regulations which are applicable to all public Elementary Schools in England and Wales.

These subjects are as follow :—

Standard Subjects.—(*a*) Reading; (*b*) Writing; (*c*) Arithmetic.

Class Subjects.—Not more than two of the following subjects. (*d*) English; (*e*) Geography; (*f*) Elementary Science; (*g*) History; (*h*) [for Girls] Needlework.

Other Subjects.—(*i*) Bible Instruction; (*j*) Vocal Music; (*k*) Drawing; (*l*) Drill and Physical Exercises; (*m*) Kindergarten Exercises for Infants; (*n*) Object Lessons; (*o*) Special Instruction for the Blind and (*p*) for Deaf Mutes.

When the instruction is sufficiently advanced, boys and girls in the upper standards may also take not more than two *Specific Subjects.* The subjects most generally chosen are at present Mathematics (i.e. Algebra, or Euclid to Book II. and Mensuration), and Animal Physiology, in Boys' Schools; Animal Physiology and Domestic Economy (including Cookery), in Girls' Schools. Mechanics, Botany, or some other specific subject, is sometimes taken in lieu of one or other of the subjects mentioned above.

The Board, as a general rule, have availed themselves of the best books and the best apparatus produced by different publishers and manufacturers. In no case have they published any books of their own, but at their suggestion improvements have frequently been made both in books and apparatus. A list of the books and apparatus from which managers and teachers can choose, is shown in Exhibit No. 31.

The Exhibits enumerated below are a special selection from the apparatus, etc., in use in the Board's Schools. They are arranged in order, beginning at the door, round the North, East, South, and West walls.

Standard Subjects.

(*a*) *Reading.*

32. Alphabet Box on Stand, containing sets of capitals and lower case letters, with frame for forming words and sentences.

33. Lessons on Letter forms. Six sheets mounted on three cards, with manual.

(*b*) *Writing.*

Swing Slates (No. 14), and Blackboards (No. 15) are used in connection with Copy Books (without head lines) in various rulings.

Head line Copy Books are also largely used.

(*c*) *Arithmetic.*

34. Abacus, strongly framed.

CLASS SUBJECTS.

(*d*) *English.* (No Exhibits.)

(*e*) *Geography.*—This subject has been greatly modified in the New Code. It consists now of physical more than of political geography, and commences with the school premises themselves. It is taught principally by means of maps, first of the school and neighbourhood, specially prepared (generally by a senior scholar or pupil teacher), then of the division in which the school is situated, afterwards of London and its environs, and a variety of other topographical and physical maps.

35. Relief Globe, with extra iron stand.

36. Mariner's Compass.

See Maps Nos. 151, 152, 153, 154 (which hang above), maps generally and diagrams.

(*f*) *Elementary Science.*—This is a new subject, and as yet has not frequently been taken up in the schools, though the teachers are always expected to give some knowledge of the elements of natural history and physical science, in the form of object lessons. General instructions for the guidance of teachers in this respect have been issued, and diagrams, &c., are supplied.

37. Instructions to Teachers. See also Museum Cupboard, No. 13 *b*, above.

(*g*) *History.*—In connection with this subject see Historical Pictures, Nos. 179, 180, 181, over north mantel-piece.

(*h*) *Needlework.*—In no subject of instruction has more progress been made than in the teaching of needlework in elementary schools. The old plan was to teach each child individually, and the necessarily small amount of time that could be given to each scholar in an ordinary school was not sufficient to turn her out a good needlewoman. The increased size of the schools, which arose out of the great increase of attendance after the Education Act of 1870 was passed, led to a better classification of the children, and their collection in classes of the same standard under qualified teachers. A different method of instruction thus became necessary, and in 1878 the London School Board introduced, under the direction of Mrs. Floyer, the simultaneous class teaching of needlework, which is now in use in all its schools. The teacher, standing before her class, shews the formation of the stitches on a large demonstration frame, and then, calling up the children in turns to follow her example, elicits from the class most of the possible mistakes and omissions that require to be corrected or supplied. The whole class then practises the stitch till it is mastered. Cutting out is taught in the same way to a class simultaneously on the chequered blackboard, the lines of which correspond with the sectional paper the children hold in their hands. Measurements are accurately taken, decreasing or increasing, the size is practised, and the material is then marked out with inch tape and pencil before it is cut. In infants' schools, as a preliminary to the use of needle, cotton and thimble, needlework drill is taught, and the practice thus gained enables the children to commence their needlework with ease. To lessen the work of the teachers, the various pieces required for Government and test examinations are now supplied ready prepared to the schools, and as many as three millions of these will be sent out annually to the schools under the London Board.

38. Needlework Cupboard and Baskets.

39. Chequered Blackboard, with sectional paper, both showing a shirt drawn to scale.

40. Samples (4) of Demonstration Sheets.

41. Case of Implements.

42. Case of Teaching materials.

43. Government Examination Pieces, unworked.

44. Ditto worked in schools.

45. Samples of Garments, worked in schools.

46. Glass Shades (3), with dolls dressed by the children, from a Bermondsey school.

47. Cutting-out Table.

48. Needlework Table, with Demonstration Frame—patterns of darning and herring-boning.

OTHER SUBJECTS.

(*i*) *Bible Instruction.*—On the 8th March, 1871, the Board passed the following resolution:—

"That in the schools provided by the Board the Bible shall be read, and there shall be given such explanations and such instruction therefrom in the principles of Morality and Religion as are suited to the capacities of children: provided always—1. That in such explanations and instruction the provisions of the Act in Sections VII. and XIV. be strictly observed, both in letter and spirit, and that no attempt be made in any such schools to attach children to any particular Denomination. 2. That in regard of any particular school, the Board shall consider and determine upon any application by managers, parents, or ratepayers of the district, who may show special cause for exception of the school from the operation of this resolution, in whole or in part."

On the 26th July, 1871, they also passed the following additional resolutions:—"1. That, in accordance with the general practice of existing elementary schools, provision may be made for

offering prayer and using hymns in schools provided by the Board at the 'time or times' when, according to Section VII., Sub-Section II., of the Elementary Education Act, 'Religious observances' may be 'practised.' 2. That the arrangements for such 'Religious observances' be left to the discretion of the teacher and managers of each school, with the right of appeal to the Board by teacher, managers, parents, or ratepayers of the district. Provided always—That in the offering of any prayers, and in the use of any hymns, the provisions of the Act in Sections VII. and XIV. be strictly observed, both in letter and spirit, and that no attempt be made to attach children to any particular denomination." The Syllabus of Religious Instruction for the year 1884 is shown in exhibit No. 49. The selection of the prayers and hymns is left to the managers and teachers.

(j) Vocal Music.—The introduction of Music Teaching in Board Schools.—In March, 1871, the Board resolved that the art and practice of singing should be taught as far as might be possible in the Board Schools as a branch of elementary education. In the year 1872 it was decided that singing from notes should be taught, and the present singing instructor, Mr. Evans, was appointed to direct and superintend the music teaching. The Board also decided that either the staff notation or the tonic sol-fa should be used, whichever was preferred by the teachers, and that the parrot-like teaching of school songs by ear, should, as far as possible be discontinued.

No difficulty has been experienced about the two methods of teaching. When teachers understood that the board would not be satisfied with the children gaining a knowledge of musical notation only, but that they would expect them to pass the instructor's examination in sight-singing, &c. (such as is now required by H. M. I. in order to gain the full grant for music), the teachers elected to teach by the tonic sol-fa method and notation, and suitable apparatus was supplied for the purpose.

The instructor's chief difficulty for some time arose from the scarcity of teachers qualified to teach singing by note. To meet this difficulty, at the beginning of his work, he formed an evening singing class for the instruction of head and assistant teachers in the method adopted for school teaching. Most of the teachers availed themselves of the opportunity thus given once a week, not only to learn the method, but how to teach it successfully in their schools. Soon a number of teachers obtained a music certificate, and became good teachers of music. But the instructor finding that many teachers beginning in adult age to learn to sing from notes, would never make thoroughly efficient teachers of music, formed classes in different districts for pupil teachers, in order to increase the teaching power for music in the schools. For a few years more than one thousand pupil teachers met the instructor once a fortnight to learn to sing from notes, and how to teach singing themselves. These young teachers made very rapid progress, because of the favourable age for music at which they were learning, and were soon able to take a large share in the music teaching. Thus the teaching power for music was rapidly and largely increased in the schools.

Owing to the large and ever increasing number of schools for the instructor to visit, it became necessary to appoint teachers for the evening classes, to work under his guidance and superintendence. For some years it has been necessary every winter to form as many as ten classes for head and assistant teachers. All the music teaching in the Board Schools has been done without the aid of musical instruments of any kind, it being the decided opinion of the instructor that they would prove harmful rather than helpful. During this year, under the new code, beginning with May, 1883, most of the schools have passed in the Government examinations for note singing, and earned the full grant for music.

For six years the singing of the Board School children on the large orchestra at the Crystal Palace, has given the public an opportunity of judging of the style and manner of singing taught in the schools, and the attention given to the training of the voices.

Music teaching in Infant Schools.—The instructor has arranged for music teaching to begin with the youngest children in the infants' school. With them it is an act of listening and imitation. Music is taught, but not notation. The teachers' first work is to cultivate the ear and voice, and in doing this she is careful to sing herself with soft and pure tone, the children listening, and then imitating the teacher. She is also careful to avoid all extremes in pitch, so that there shall be no straining of the vocal organs. The babies' class, as it is called, is taught to sing the scale to the sol-fa syllables, giving the manual sign for each note themselves as they sing it. This and the singing of suitable action songs they very much enjoy. This application of Kindergarten principles to music teaching has been very successful.

In large infants' schools the singing is taught in four, five, or more divisions, and the work carefully graded; the two lower divisions, learning by imitation as above described, the others learning to sing the modulator, and from the manual signs given by the teachers according to the music syllabus.

In Boys' and Girls' Schools.—The organisation for music teaching in boys' and girls' schools depends upon the number of children in each standard. In some large schools each standard forms a separate division for music; in others, standards V. and VI., or IV., V., and VI are not too many for one division. Care is taken that the divisions shall not be too large for teaching thoroughly.

Instruction in tune and time, &c., in each division is given according to the music syllabus;

and as this syllabus is in advance of the Goverment syllabus, the children should be well prepared for the annual examination of H. M. inspector in music.

Time given to Music Teaching.—The time allotted to music teaching is generally two half-hours per week. In infants' schools, and in the lower divisions in the boys and girls' schools, short lessons of five or ten minutes, and one longer lesson of thirty minutes are often given, making up the one hour per week.

The Instructor's Visits.—The instructor visits the schools periodically to assist the teachers by suggestions and hints on teaching and voice training, &c., and when necessary giving short model lessons himself; he also examines the work done, and reports to the School Management Committee the progress made in each department, the condition of the apparatus, the number of teachers qualified to teach singing by note, and the organization for teaching music.

Teaching by Staff Notation.—When the highest division in a school has passed successfully through the music syllabus by the tonic sol-fa notation, it is well prepared to pass on to the staff notation. The sense of time and tune having been firmly established, the children quickly master the difficulties of this notation, and sing from it intelligently and correctly. This plan of teaching both notations will soon be adopted in many of the schools, and the children will then leave school with a sound knowledge of music by the tonic sol-fa method and notation, and in many cases a sufficient acquaintance with the staff notation to render their subsequent work in music both interesting and progressive.

50. The Modulator, which in the tonic sol-fa notation takes the place of the staff in the ordinary notation.

51. School charts, in three sets, in the tonic sol-fa notation. These charts are used in the lower classes instead of books, and in the higher classes with books for additional practice.

52. Curwen's Companion for teachers of the tonic sol-fa method.

53. Music syllabus, drawn up for teachers' guidance.

54. Taylor's stave modulator.

55. Taylor's music sheets.

(*k*) *Drawing.*—The Board have always felt that Drawing is of great importance as an educational agent if taught in such a way as to develop accurate observation, to improve the graphic memory, and to give increased powers of description of an object. A sketch is often, indeed, the shortest and best description of the object. When drawing is interestingly and intelligently taught, children gain a power which helps them in other studies, notably in spelling, arithmetic, geography and science. The study of drawing has also a practical bearing on the after-life of scholars, since many operatives have to work from or make a drawing more often than they have to read or write a letter. All the schools under the Board are supplied with drawing materials, objects and copies. At least one specially certificated drawing teacher is on the staff of each school. With the view of extending and improving the methods of imparting instruction on the subject to large classes the following apparatus (Nos. 56 to 61*c*) has recently been introduced :—

56. *Glass Plane.*—With this is demonstrated the conditions on which a solid object is represented on a flat surface, and the difference that exists between the real and apparent form of such objects.

57. *Stand for Objects.*—Three objects of identical shape are placed on this in different relations to the eye, so that the tracing on the glass plane will reveal, supposing discs to be dealt with, the great variation in their apparent shape, one appearing as a circle, another as an ellipse, and the third as a straight line.

58. *Coloured Freehand Copies**.—The colour makes the copy attractive to children, enables them to distinguish the form more readily, and induces a habit so useful to draughtsmen of looking at and comparing masses or spaces instead of simply observing outlines. In drawing a small portion only of one of these copies, a pupil does it with intelligence, as its use and connection with a scheme of ornament is seen.

59. *Hinged Black Board.*—The elementary principles of Solid Geometry are easily explained and realized by using the boards placed vertically and horizontally, and afterwards so as to form one plane in projecting a solid.

60. *Common Flat Objects.*—These are interesting freehand copies, because they are real. They may be also used as subjects from which to practise model drawing.

61. *Apparatus to teach the judgment at sight:—Length*—Rods, from 2 to 24 inches in length.

61*a*. *Proportion*—Ruler, with a slide, and markings for teachers' exclusive use.

61*b*. *Length and Breadth.*—Frame with shutter marked for teacher.

61*c*. *Angles.*—Disc with hands, and marked for teacher.

62. Wooden Drawing Models—Pyramid, Cone, Cube, Sphere, &c. By Miller. Set of 9.

63. Vases (Red) by Wedgwood. Set of 3.

64. Ditto (White) by Wedgwood. Set of 3.

65. Set Squares, for mathematical drawing.

65*a*. Ditto, Large size, for teachers' use on Blackboard, &c.

* These copies are in the Corridor.

66. Specimens of Drawing Copies, Freehand and Geometrical. (These are in the Corridor.)

(*l*) *Drill and Physical Exercises.*—In November, 1871, the Board resolved "that it is highly desirable that means shall be provided for physical training, exercise and drill in public elementary schools established under the authority of this Board," and the question of the physical development of the children in their schools has at various times occupied the attention of the London School Board. For some years, however, the only exercises available either for boys or for girls were the drill and extension exercises under the drill serjeant. These, though admirable for securing precision of discipline and smartness of bearing, were practically useless as a means of developing the body in its various parts, being confined mainly to one set of muscles.

In 1878 the attention of the Board was called to Ling's system of free standing exercises, which were already in general use in Sweden, Germany, and other countries of the continent. The system is one well suited for elementary schools, as it requires no apparatus, and can be used in the ordinary schoolroom or playground. By systematised exercise of all the muscles in turn, it secures a harmonious development of the whole body, without violent exercise, and with a precision of movement as perfect as in any drill. In January, 1879, the Board, as an experiment, engaged Miss Löfving, one of the most competent of the Swedish teachers, to train the mistresses in the exercises, and to superintend their introduction into girls' and infants' schools. So beneficial was the system found to be to both teachers and children, and so popular with the latter, that Miss Löfving was further engaged for one year, and again for a third term. In the summer of 1881 a large number of girls, many of them from the poorest schools of the metropolis, went through their exercises at Beethoven Street School, before the Princess Louise and the members of the Board; and the excellent results there shewn in the improved physique of the children, led to the permanent appointment of Miss Bergman as Superintendent of Physical Exercises under the Board, Miss Löfving being unable to remain longer in England. The Board has this year determined to appoint a second Swedish lady to meet the large demand from its mistresses for instruction. On Mondays and Wednesdays of each week during June and July, between the hours of 12 and 1, Miss Bergman will have, in the East Central Court, a class of little girls from Board Schools, using the apparatus, as well as performing the exercises without it, and will be ready to answer all enquiries on the subject.

Recently, through the generosity of Lord Brabazon, the Chairman of the Metropolitan Public Gardens, Boulevard and Playground Association, and others, a large part of the amount required for the establishment of a Swedish gymnasium, and for the engagement of a Swedish officer for six months to teach the schoolmasters, has been presented to the Board, and the gymnasium will shortly be at work at Crampton Street School, Lambeth. Captain Hadsum, the officer in question, is already holding classes of masters for the free-standing exercises. A similar gymnasium has been erected by private speculation in the Health Exhibition.

(*m*) *Kindergarten Exercises.*—In 1874 the Board first introduced the Kindergarten system into its infants' schools, and appointed a lady trained in its work to promote the right understanding of its principles amongst the teachers. Evening classes were held for them in various parts of London to instruct them in the manipulation of the occupations most suitable for large classes, to give them an insight into the new views of child nature opened out by Fröbel, and to suggest how old methods may be gradually superseded by new. The present instructor (Miss Lyschinska) visits the schools to assist the mistresses in applying Kindergarten methods for the teaching of form and numbers and for the illustration of object lessons. Dexterity of hand, order and correctness of eye are stimulated, and all impressions which have been taken in passively are put to the test and corrected, when reproduced by the fingers in a variety of material. Such teaching as this is of great importance in elementary schools where the children lack, as a rule, the education of the nursery and of the mother's chat, and the hours which might otherwise be weary ones for such young scholars, are made to pass happily and profitably.

70. Twelve Photographs of Board school children at Kindergarten exercises.

Toys.

71. Wooden Churn; and 71A. Glass Churn. To illustrate lessons connected with the natural history lesson on the cow.

72. Bedstead, with doll and bedding (to show children how to make a bed, nurse dolly, &c.). The bedding was made by children of six and seven years.

73 and 74. Kitchen Dresser with Tea Service. These are to show children how to set the tea-things, to wash them, and put them in place.

75. Chest of Drawers. These are used to keep various doll's things, made in paper folding lessons, to give children a taste for keeping things tidy.

76. Dust Pan, with brush. The children are taught to use it in the room, after lunch or after work.

77. Wooden Animals, to be used in building lessons.

Work Material and Exercises.

Weaving.—78. Box containing paper mats and strips, with needles.
79. Frame and list for weaving.
80. Samples of paper-weaving done by children.
81. Sample of list-weaving done by children.
Pricking.—82. Pricker, Pad, Cartridge Paper, Chequered Paper.
83. Specimens of pricking exercises done by children.
84. Apparatus for copying and multiplying drawings (used also for sewing and drawing exercises).
Sewing.—85. Implements and Materials.
86. Examples of exercises done by children.
Stick and Ring-laying.—87. Material in a box.
88. Work done in schools.
Paper Folding.—89. Material for children and for teacher.
90. Specimens of work done by children.
Fraying.—91. Remnants of Woollen Stuffs.
92. Exercises done by very lit le children, and playthings made with the teacher's help.
Bead Threading.—93. Coloured Beads on string.
94. Large Beads for teacher's use.
95. Exercises done by children of three and four years in learning number and colour.

Drawing Material and Exercises.

96. Cardboard Models used as drawing copies.
96*a*. Chequered Blackboard—for Drawings to be copied by the children on chequered slates, paper and books.
97. Exercises done by children on slate and paper.

Gifts.

98. Gift I., as used in Board Schools.
99. Gift II., as used in Board Schools.
100. Gift III., as used in Board Schools. 100A. Gift III., large size for teacher's use.
101. Gift IV., as used in Board Schools. 101A. Gift IV., large size for teacher's use.
102. Specimens of exercises, showing combinations of occupations, e. g. knitting with fraying, colouring with paper-folding, colouring with pricking, sewing with fraying, &c.
103. An Aquarium kept in some schools; the children are led to care for its inhabitants, at the same time they bring shells and food for them and have lessons upon them. The occupations taken in different lessons are associated with the subject.
104. Kindergarten Table, combining teacher's desk and demonstration table, with hinged top adjustable at any angle.
(*n*) *Object Lessons.*—The London School Board, in its original scheme of instruction, laid down the principle that the children during all their years' attendance at school should have some instruction in natural knowledge through object lessons. Specific directions in regard to this have been issued from time to time. At present it is expected that in all infants' schools such lessons should be regularly given, and that in boys' and girls' schools they should assume the form of "a progressive course of simple lessons, adapted to cultivate habits of exact observation, statement, and reasoning," though it is not necessary that the children should be presented in it for the Government Examination. Great latitude, in fact, is given to the teachers as to the way in which they are to carry out these regulations; few schools as yet take elementary science as a class subject, and it is often the practice to make this objective instruction preparatory to some specific scientific subject which is taken in the upper standards. The Board provides a liberal supply of natural history and other diagrams, specimens of which are exhibited [*see hereafter*, E]; and the teachers are encouraged to get together illustrative collections, and to induce the scholars to bring objects of their own.
111. Natural History Collection, forming part of the School Museum at Park Walk, Chelsea, Boys' and Girls' Schools.
111A. Other collections, from the School Museum of the Bowman's Place, Holloway School.
If a promising commencement is made, the Board supplies a cabinet for their reception. One of these, with its miscellaneous contents, is exhibited. [*See Museum Cupboard*, 13 *b*.]
A box of small apparatus is also furnished to such teachers as desire to make experimental illustrations, the importance of which is strongly urged by the Board. *See* 112. Apparatus for simple experiments.
It is considered desirable that the teaching of other subjects should also be given, wherever practicable, not so much from books as from the actual things themselves, or pictures of them.
113. Myers' Pictures of useful Plants, set of 12 cards in portfolio.

114. Bacon's Pictures, Lessons of Natural History, specimen of a series of 18.

115. Illustrations of Hey-Speckter's Fables—Natural History and Rural Scenery, set of 9 mounted together as a picture roll.

(See also Instructions for Teachers, No. 37, above.)

(*o*) *Instruction of the Blind.*—The Board in 1871 decided to put into force their powers for compelling children to attend school; and it was not long before the visitors, in the exercise of their duties, met with a number of blind children for whom there was no proper school provision. In April, 1875, the Board appointed an instructor, who, with an assistant, did what was possible for the blind children until the year 1879; when the Board decided to engage Miss Greene, who had been trained at the Royal Normal College at Upper Norwood, as superintendent of the instruction of the blind.

The following paragraph, taken in substance from a report of the British and Foreign Blind Association, will explain the grounds upon which the Board have adopted the apparatus now in use:—

Embossed printing was first introduced in Paris by Valentin Haüy in 1784. The character adopted was naturally the Roman letter, as being that to which he was accustomed. Mr. Gall, of Edinburgh (1827), and Mr. Alston, of Glasgow (1837), subsequently printed books, using modifications of the Roman letter. Then two shorthand systems were introduced—one stenographic, by Mr. Lucas (1837), the other phonetic, by Mr. Frere (1837), both of whom used arbitrary characters. A modification of the Roman type, including the use of both capitals and small letters, was first embossed in 1838 by Mr. Dawson Littledale, and is adopted in printing for the blind at Worcester. Finally, Dr. Moon (1847) introduced the system which bears his name. He aimed at greater simplicity, and used but few abbreviations. He employed Roman letters whenever their form was sufficiently simple to be easily distinguished by touch, while in other cases he adopted the simple line characters by Mr. Frere. Books were printed in all these systems, but none of much importance, except the Bible. The managers of each institution adopted the system of which they had heard most favourably, and proper school books scarcely existed, because it was not worth while to print books which could only be used in one or two schools. Moreover, to all these systems attached the serious defect that they could not be written.

The system introduced (1834) by Louis Braille, in Paris, is the only one (except the New York Point, used in some American schools) which enables a blind child to write as rapidly as sighted children in ordinary school exercise, and also to read and so to correct what he has written. It is, therefore, indispensable where blind children share the instruction of the sighted, and has accordingly been adopted by the London School Board in its classes for the blind. Moon's system is also used for reading, as, in many instances, enabling a blind child to *read* sooner than if confined to Braille, in which the letters of the alphabet are learned by the process of learning to write them.

Details of the scheme for the instruction of blind children may be found in Exhibit No. 119.

120, 120*a*, 120*b*. Embossed Alphabets—Worcester (roman), Moon's and Braille Types.

121. Reading Book in Worcester (roman) Type.

122, 122*a*, 122*b*. Reading Books in Moon's Type, *with illustrations in relief*. These books were produced by Dr. Moon at the request of the Board, in order that the blind children in Board Schools might have books the exact counterpart, including the illustrations, of those used by their sighted companions. They are believed to have been the first *illustrated* school books for the blind ever published.

123. Royal Reader, First Standard, 1 volume, in Braille Type.

123*a*. Royal Reader, Second Standard, 2 volumes, in Braille Type.

123*b*. Royal Reader, Third Standard, 2 volumes, in Braille Type.

123*c*. Royal Reader, Fourth Standard, 3 volumes, in Braille Type.

124. History of England, 1 volume, in Braille Type.

125. Relief Maps, various.

126. Guides to Relief Maps, in Braille Type.

127. Relief Globe, 12 inch.

128. Braille Writing Frame and Style, with sheet of paper showing writing.

129. Arithmetical Board, with several rows of the Arithmetical Type used as figures.

130. Text Books: Geography, Grammar, &c.—Embossed in Braille Type by blind children in Board Schools.

(*p*) *Instruction of Deaf Mutes.*—It was stated in the last paragraph that the visitors, in the exercise of their duties, met with a number of blind children, for whom there was no proper school provision. Similarly there was found a number of deaf and dumb children for whom previously to the year 1874 no suitable instruction could be obtained, except in institutions supported by voluntary contributions. In September of that year, the Board determined to provide instruction for these children in the ordinary schools, and accordingly appointed an instructor (the Rev. W. Stainer), who had had 30 years' experience in teaching deaf mutes, to initiate a system of deaf mute instruction at the Wilmot Street, Bethnal Green, Board School. At first there were only five children in attendance; but this number

soon increased. It was also found necessary to open at successive periods additional classes in different parts of the metropolis. There are now 230 children under instruction, who are assembled for instruction at eight centres in different districts of London.

As to the system of instruction, the first efforts of the Instructor were to teach the children to speak. They soon learned the sounds and some simple words: but in a few months the number of children increased threefold, and for a time no assistance could be obtained to carry on the "Oral" teaching—consequently as fresh cases flowed in the "Oral" teaching diminished and the "Manual" teaching, which is much easier, increased. However, as time went on, a supply of teachers on the "Oral" system became available, and that system was gradually adopted as the supply of teachers increased. In 1879 a class was placed in charge of a teacher, who had been trained at the College of the "Association for the Oral Instruction of the Deaf and Dumb," Fitzroy Square, Within the last two or three years, the Board have appointed only those teachers who are qualified to instruct on the "Oral" system, which is now adopted exclusively in all the classes of the Board.

Further and full particulars of this section of the work of the Board will be found in Exhibit No. 131.

132. *Hill's Pictures of Objects.*—Pictures of objects are found to be a necessity to the teacher who has to give simultaneous instruction to a class of deaf children. The above named series is used extensively on the Continent. The 24 sheets contain 384 coloured illustrations. The author of these says: "The pupil must not be allowed to dwell upon the picture alone, but his attention must be directed to similar objects and circumstances in his own surroundings, in other words—he is to be made to understand the living world in which he finds himself, and to a proper understanding of which the picture is only to be used as a help."

132*a*. *Hill's Pictures*, bound and indexed for teacher's use.

133. *Object Lessons.*—These lessons are used in connection with the Object Pictures, being a literal translation of Hill's "Language and Reading Book," and forming a handbook to his series of pictures. In addition to the lessons it contains a description of the illustrations and an index of reference to about 2300 of the principal words found in the lessons.

134. *The Air Bag.*—The air bag, with mouth piece, is in constant use for the purpose of increasing the breathing power so often defective in deaf children, through the lungs not having been brought into operation for the purpose of producing voice in speaking. There are other means of accomplishing this, but in the schoolroom blowing through a mouthpiece, the effect of which is *seen* by the expanding of the bag, is found to be the most simple, amusing, and effectual means, especially for very young children, and there can be no better exercise for the lungs introductory to the production of sound and preparatory to vocal exercises.

135. *The Audiphone.*—This is an instrument invented for the purpose of superseding the ear trumpet used by those who are hard of hearing. Through the liberality of the inventor (Richard D. Rhodes, Esq., an American gentleman), in supplying instruments, free of cost, a series of experiments have been carried out with all the deaf and semi-deaf children attending the Board's classes.

136. *The Audiometer.*—This is an instrument, invented by Professor Hughes, by which the actual amount of hearing possessed by deaf and semi-deaf children can be exactly ascertained.

137. *The Circular Desk.*—It has been found practically impossible to teach deaf and dumb children along with the ordinary day school scholars. Special class-rooms have therefore been provided and fitted with circular desks after the pattern of the school at Richen, near Basle. The desk exhibited is an improvement on those in use at the present time. One section of the desk is intended to accommodate three children; two sections to accommodate six children: three sections to accommodate nine children, and four sections to accommodate 12 children. Thus a class of 12 children may be split up into divisions according to the composition of the staff—whether one teacher with one, two, or three pupil teachers.

137*a*. Drawings showing the varying arrangement of the Circular Desk, as above.

Specific Subjects.

The specific subjects are additional subjects of instruction for children in Standards V., VI. and VII. They are not obligatory; and no child may be examined in more than two of these subjects. The Government Code gives a considerable choice, including sciences and modern languages; but those most frequently selected by the teachers of the London Board Schools are Algebra, or Euclid, and Mensuration, and Animal Physiology in boys' schools, and Domestic Economy (including Cookery) and Animal Physiology in the girls' schools. Some schools take Mechanics, Botany, or some other scientific subject. The instruction is as far as possible by means of diagrams, models or experiments; and as some of the apparatus is expensive, it is supplied on loan from the Board's Store for a limited period to any school that requires it. From this loan collection there are exhibited models of parts of the human frame—a torso (No. 142), eye (No 143), larynx (No. 144), and heart (No. 145). Here are also exhibited some enlarged models of plants, with moveable parts (No. 146), and a box containing specimens of various woods (No. 147).

With reference to *Cookery*, which, by the Government Code, is included in Domestic

Economy, the first suggestion that the teaching of this subject should be introduced into the girls' schools under the London School Board, was made by Mr. John Macgregor, in January, 1874. In 1876 two class-rooms were opened in which instruction in Cookery was given to female pupils, and two more were added in the following year. In 1878 a more comprehensive scheme was adopted. It was decided to build cookery class-rooms, technically called "centres," in the playgrounds of convenient schools in which pupils from the Board Schools within a certain distance of the Centre were to receive instruction in cookery. The first of these class-rooms was erected at the Stephen Street School, Edgware Road. At the present time there are thirty such class-rooms, while more are building or projected. In addition to this, in four schools, so near the boundary of the School Board area as to be beyond the range of any centre, Cookery is taught in one of the class-rooms fitted up for that purpose. In 1882 the Committee of Council on Education recognised practical cookery as a subject for instruction, and offered an annual grant of 4s. for every girl who, having attained the age of twelve years, should receive forty hours' instruction in cookery during her school year. In the code for this year the limit of age is taken away, but the grant is restricted to girls who have reached the fourth standard. The cooking staff consists of one superintendent (Miss Matthews), with an instructor and a kitchen-maid for each centre. At the present time there are more than 6,000 girls on the roll for cookery instruction. This represents about half the number who receive instruction during the year. The average attendance is about 80 per cent.

The Cookery class-room measures 21 feet by 18 feet, and is shewn upon the plan exhibited, No. 148. A class of 30 pupils can be taught at one time. The fittings consist of:—1. A counter with gas stove in centre. 2. Two fire-place openings, one fitted with an American range, and the second with an ordinary kitchen range, with oven and boiler. 3. A dresser. 4. A wash-up with sink. 5. A gallery for the pupils. 6. A cloak room. The cost of each class-room is £270.

The syllabus of cookery lessons will be seen in Exhibit No. 149. It is proposed shortly to show, from time to time, a Board Cookery Class under instruction in a neighbouring room.

E. Miscellaneous Exhibits.

Careful attention has been given by the Board to the various objects with which the walls of its school-rooms are hung. The best maps of every description, political, physical, orographical or outline, are chosen. A large variety of astronomical, botanical and physiological diagrams, and representations of trees, plants, animals, manufactures and trade, machinery and the properties of bodies, are supplied, but till lately it was difficult to find any pictures possessing much artistic merit at a reasonable cost which could be hung on the walls of the schools. This was particularly the case with religious pictures, which as produced for this purpose are almost invariably of an inferior description. To meet this want some good cheap engravings of the old masters, such as Raphael's Paul and Barnabas at Lystra, Poussin's Eleazer and Rebecca, Raphael's St. Michael, his allegorical figures from the Vatican, the Two Children by Luini, &c., have been procured from Paris, and largely supplied to the schools. A great impetus has been given to the decoration of school walls by the exertions of the Art for Schools Association, and the Board has adopted many autotypes from the Old Masters, engravings from Sir Joshua Reynolds' portraits of children, and historical and other pictures from their collection. It is much to be desired that artists would turn their attention to this subject, and would produce at a reasonable rate good engravings in colours of country pursuits, which are especially attractive to town children. Such pictures of very small size procured from Paris are in use in the Board's Schools as reward cards, together with cards of flowers, fruits and vegetables. See 201 and 201A, hereafter.

N.B.—The Maps, Diagrams, and Pictures are in each case arranged in consecutive order, starting from the doorway, and passing round the West, North, East, South and West walls. Some are also to be found in the Corridor.

Maps.

151. Plan of a Board School (Pritchard's Road, Hackney). Drawn in the School by an Assistant Master.

152. Map of the Immediate Neighbourhood of a Board School (Victoria Road, Starch Green). Scale, 6 feet to a mile. Drawn in the school by a pupil teacher. This is one of a number of maps for the drawing of which prizes in value from 5s. to 20s. and amounting to £33 10s. in the aggregate, were awarded to scholars and pupil teachers by the Board.

153. Map of a School Board Division (Tower Hamlets), coloured in parishes, and with Board schools marked in red.

154. Map of London, shewing the School Board Divisions. Scale, 3 in. to a mile.

155. Stanford's Stereographical Map of the British Islands.

156. Stanford's Orographical Maps, edited by Professor Ramsey—Asia. Specimen of a series of seven maps.

157. Blackboard Map of England, by L. Suzanne. With blackboard surface on the reverse.

158. Philip's Map of Middlesex: showing parishes, poor law unions, metropolitan boroughs and Board of Works districts.

159. Physical Map of the River Basin of the Thames. By T. Ruddiman Johnston.

159A, B, C, &c. Other Maps which will be found in the Corridor.

Diagrams.

160. Geographical Pictures, designed by Ciceri, under the direction of M. Félix Hément. Specimen of a series of 12.

161. Collins's Diagram of the Points of the Compass.

162. Hachette's Illustrations in Natural History—Domestic and Wild Animals, Birds, Insects, and Fishes. Specimens of a series of 50.

163. Jarrold's coloured illustrations of the Animal Kingdom, scientifically arranged according to class, order, sub-order, &c. Specimen of a series of 12.

164. Rowney's Sepia Studies of Animal Heads, after Sir Edwin Landseer, and by N. H. Long. Specimens of a series of 9.

165. Moffatt's pictures of the Vegetable Kingdom—Trees. Specimen of a series of 8

166. Moffatt's Pictures of the Animal Kingdom. Specimens of a series of 9.

167 and 167*a*. Pictures of Sunflower and Foxglove. (Art for Schools Association.)

168. W. & A. K. Johnston's Illustrations of Botany. Specimen of a series of 4.

169. W. & A. K. Johnston's Illustrations of Natural Philosophy. Specimen of a series of 4.

170. Leutemann's Diagrams of Animals. Specimens of a series of 39.

171. T. Ruddiman Johnston's Astronomical Illustrations—The Tides, Seasons, &c. Specimen of a series of 6.

172, 172A, B, C, &c. Other Diagrams, which will be found in the Corridor.

Pictures.

175. St. Michael, Raphael. Engraving.
176. Elephant. Photograph by Dixon.
177. St. Catherine, Raphael. Autotype.
178. Study for Miraculous Draught of Fishes, Raphael. Photograph.
179. Princess Elizabeth, J. E. Millais. Mezzotint.
180. Princes in the Tower, J. E. Millais. Mezzotint.
181. Portrait of Edward VI., Hans Holbein. Autotype.
182. Two Children, B. Luini. Engraving.
183. TheAge of Innocence, Sir Joshua Reynolds. Engraving.
184. Simplicity, Sir Joshua Reynolds. Engraving.
185. Madonna del Gran Duca, Raphael Sanzio. Photograph.
186, 186*a*. Caldecott's Nursery Pictures. Coloured.
187. Rebecca at the Well, Poussin. Engraving.
188. Prodigal Son, Spada. Engraving.
189. Madonna Alla Seggiola, Raphael. Photograph.
190. La Belle Jardinière, Raphael Sanzio. Autotype.
191. Silver Birches, F. Slocombe. Etching.
192. Paul and Barnabas, Raphael. Engraving.
193. Miss Penelope Boothby, Sir Joshua Reynolds. Engraving.
194. Miss Bowles. Sir Joshua Reynolds. Engraving.

195, 195*a*. Raphael's Allegorical Figures from the Vatican. Two specimens of a series of 11 Engravings.

196, 196A, B, C, &c. Other Pictures, which will be found in the Corridor.

Specimens of Certificate and Reward Cards.

200. Certificate awarded on passing the Standards at Day or Evening Schools.

201 and 201*a*. Reward Cards awarded for regular and punctual attendance.

202. Certificates awarded by the London School Swimming Club, for proficiency in swimming. Swimming is not a subject recognised by the Code. A voluntary association was, however, formed in the year 1875, under the title of the "London Schools Swimming Club," to promote the acquisition of swimming by teachers and scholars attending any public elementary schools, whether Voluntary or Board. More than 18,000 of its members—teachers, pupil teachers, and scholars—male and female—have by means of the club been instructed in the art of swimming, and have obtained facilities and opportunities for regular practice. The president of the club is Edward North Buxton, Esq., Chairman of the School Board for London, the Vice-Chairman is John MacGregor, Esq.; and the Secretary is Mr. F. Calmady Richardson, Bowling Green Lane Board School. The above is a specimen of the certificate awarded.

Science Teaching at Pupil Teachers' Central Classes.

203. Cupboard containing Science Apparatus for Instruction at the Board's Central Classes for Pupil Teachers.

Drawings of Board Teachers.

204. Prize Drawings, executed by scholars and pupil teachers in Board schools.

205. Art Class Certificate Drawings, executed by teachers under the Board at the Saffron Hill School of Art since September last, and accepted by the Science and Art Department as of sufficient merit to satisfy the examiners.

[*These two Classes of Exhibits will be on view later.*]

F. Industrial Schools.

The Board, besides being directed to supply their district with a sufficient amount of accommodation in Public Elementary Schools, are also empowered to put in force the Industrial Schools Act. Under this Act the Board have established three industrial schools, viz.: (*a*) an Industrial School at Brentwood for 100 boys; (*b*) the ship "Shaftesbury," off Grays, Essex, for 500 boys; and (*c*) a Truant School at Upton House, Homerton, for 60 boys. They have also entered into agreements with 57 industrial schools throughout the country, to receive cases sent to them by London magistrates at the instance of the School Board. Since the year 1871, 8,698 cases have been sent to industrial schools and training ships at the instance of the Board. During the year 1883, 887 cases were sent. These numbers include those children sent to their own schools as well as to other schools throughout the country.

The *Brentwood* Industrial School and the "*Shaftesbury*" Training Ship are ordinary industrial schools, to which children are sent by magistrates under the provisions of the Industrial Schools Act, who have been reported as falling under one or the other of the following categories:—(*a*) A child apparently under fourteen years of age—(1) Found begging or receiving alms, or in any street or public place for that purpose. (2) Found wandering, and not having any home or settled abode. (3) Found wandering, and not having proper guardianship. (4) Found wandering, and not having visible means of subsistence. (5) Found destitute and being an orphan. (6) Found destitute, and whose surviving parent is undergoing penal servitude or imprisonment. (7) Frequenting the company of reputed thieves. (8) Lodging or residing with prostitutes, or in a house resided in or frequented by prostitutes. (*b*) A child, apparently under twelve years of age—(9) Charged with an offence punishable with imprisonment, or any less punishment, but who has not been convicted of felony. (*c*) A child apparently under fourteen years of age—(10) On the representation of parent, step-parent, or guardian, that he is unable to control such child.

The Truant School at *Upton House*, is also a Certified Industrial School, but it is restricted to children who are sent under the Elementary Education Act of 1876 for persistent truanting. In these cases the children are licensed out, on an average after 10 weeks' detention, on condition that they attend an ordinary elementary school; and if they satisfy the terms of their licence, they are finally discharged at the end of twelve months from their committal. Where the child breaks the terms of his licence, his licence is revoked, and he is brought back to the Truant school. It may be added, that the Board are reorganizing the Upton House School, so as to accommodate 100 children.

211. Training ship "Shaftesbury."
212. Band of ditto.
213. Officers of ditto.
214. Mess Deck of ditto.
215. School Deck of ditto.
216. Band of Brentwood Industrial School.
217. Ground plan of Upton House Truant School, now being rebuilt.
218. West elevation of ditto.
219. East elevation of ditto.

1560. INSTITUTE OF THE BROTHERS OF THE CHRISTIAN SCHOOLS.—This Institute was founded in France in 1680 by the Venerable J. B. De La Salle, Doctor of Divinity and Canon of the Metropolitan Church of Rheims.

Foundation of the Society.—Devoting his energy to the improvement of the moral and intellectual condition of youth, he gradually effected important changes in the educational methods of the times. Notwithstanding much opposition from some of the scholastic leaders of the day, he succeeded in establishing public Primary Education in France, founding for this purpose a Society of Teachers, viz., the "Brothers of the Christian Schools," whom he required to make the vernacular tongue the basis of their instruction instead of the Latin which, till that time, had been the language of the schools.

Schools founded by La Salle.—He it was that first opened schools (Training Colleges) for the formation of masters, no less than five having been organised by himself. He also founded schools (Technical Schools) for the specific object of giving instruction in the more important of the contemporary industries. He likewise took the initiative in establishing the first regular Boarding Schools, for which he drew up special programmes of study; and, lastly, he opened under the name of "Christian Academies," Sunday Schools for giving young men

gratuitously a sound knowledge of Christian doctrine. To this were added free courses in Mathematics, Drawing and Architecture. These few facts* shew that La Salle thoroughly realised the educational wants of his age, and claim for him no inconspicuous place in the history of education.

The Brotherhood numbers, at present, over 11,000 members, distributed as shown on the large Map of the Institute which is placed opposite the Grand Staircase, and also in the following

STATISTICAL TABLE.

Countries.	Houses.	Brothers.	Pupils.
France & Colonies	953	8,833	248,307
United States	70	698	26,338
Belgium	44	554	19,710
Canada	26	273	10,190
Italy	22	304	6,209
Spain	14	82	4,751
South America	11	77	3,820
Turkey	9	78	1,993
England	7	62	1,774
Egypt	6	122	2,306
Austria	6	82	1,659
India	5	52	1,391
China	2	16	352
Totals ...	1,175	11,233	328,800

Schools of the Brothers.—In France, the Brothers have a large number of Public Elementary Schools, Private Day Schools, Boarding Schools, as well as Technical and Agricultural Schools. In Belgium, besides ordinary schools and Colleges, they direct Art Schools and Training Colleges. In the United States and Canada they have numerous schools, Academies and Colleges. The Brothers everywhere follow the same general methods of teaching,† modifying, however, the details according to the customs of the country in which they are, and also varying their programmes to meet local requirements and the wants of the times.

Text Books.—In several countries, they have published complete series of text-books for use in their elementary and higher schools. These may be seen and examined both in the Brothers' section of the Exhibition and in the Library. In France, they have published a series of 15 volumes on Mathematics and kindred subjects, e.g., Trigonometry, Descriptive Geometry, Surveying, Theoretical Mechanics, Physiography, &c. They also exhibit their books on Geography, History, and the French language, their methods for learning foreign languages, together with the books and appliances devised and used by them in the Deaf and Dumb Schools which they direct at St. Etienne and Besançon. The Brothers in the United States and Canada have sent a complete set of their school books, and some of their works on School Government, Literature, Logic, Book-Keeping, and Commercial Law. The books published by the Brothers in Belgium, will be found in the Belgian Annexe.

Maps.—The Maps and Atlases made and exhibited by Brother Alexis have this peculiarity, that they were the first hypsometrical maps published in French. They are intended to give, by a suitable arrangement of colours, clear notions of the real configuration of the earth's surface. To these are added models in relief, some of which show the topography of certain places, such as Quebec, Montreal, Langres, and the Côte d'Or, whilst others are intended to illustrate the elementary definitions of physical geography.

Drawing.—Among the Fine Arts exhibits, the Brothers in France show their books on the various kinds of drawing, as also corresponding charts, diagrams and models in the flat, which are supplemented by a large number of working models (wood and plaster) of masonry, stone-cutting, and architecture. A collection of the latter may also be seen in the Educational Department of the South Kensington Museum. The work of the students will be found in a large number of albums and portfolios, *which are so arranged as to facilitate inspection.* There are also specimens of sketches of machinery made by the students when visiting large factories and engineering works, and field-books of compass and theodolite surveying, together with the corresponding plots and designs fully developed.

The Art Schools of St. Luke.—In the Schools of St. Luke at Ghent, the Brothers have inaugurated a comprehensive programme of Christian Art. The courses extend over a period of

* For particulars see in the Library "The Life and Work of the Ven. De La Salle," also "La Vie du Ven. De La Salle."

† See their books on Method and School Management.

seven years, and include not only drawing and painting, but also modelling, sculpture and architecture. The method followed differs essentially from that used in other countries and in the State Schools of Belgium. It originated with the Brothers, and was first applied by them in the Schools of St. Luke. Specimens of certain kinds of the work done, as well as three introductory volumes of the Course of Drawing, will be found in the Belgian Court.

Boarding and Collegiate Schools.—The Boarding and Collegiate Schools of the Brothers in Europe and America, are attended by 23,000 pupils. The courses of study usually give considerable prominence to such branches as modern languages and their literature, commercial subjects, drawing, the higher mathematics, physics, chemistry, and natural science. Some of their High Schools, particularly that at Passy, provide special classes for those of their advanced students, who intend to compete with candidates from Lycées and other Colleges throughout the country, for admission to the Paris School of Fine Arts and the Central School of Arts and Manufactures, whilst that of St. Etienne offers similar advantages for the School of Mines.

In America, some of their Colleges frame their curricula to qualify the students for academical degrees and honours. Their only College in England, St. Joseph's, Clapham, presents candidates for the Matriculation and subsequent Examinations of the London University.

Agricultural Schools.—The Agricultural Schools directed by the Brothers, are represented by the exhibits sent from l'Institut Agricole at Beauvais (France). Students over 17 who pass satisfactorily a preliminary examination, are admitted to follow the courses. These extend over a period of three years, and are not confined to the lecture-rooms, physical and chemical laboratories, and natural history museum of the establishment, but include systematic work on the model farm (370 acres) belonging to it. The students are also required to visit the best farms of the vicinity, to attend, with special professors, certain markets and sales of live stock, as well as to accompany the Brothers on frequently-appointed field-days for the practical study of botany, geology, and entomology. This school has students from most countries in Europe, and from America. See printed regulations and syllabus of subjects.

The New York Protectory.—The Technical schools conducted by the Brothers are represented by exhibits from the New York Catholic Protectory, from the School of La Salle at Lyons, and from the Schools of St. Nicholas at Paris. The Protectory was founded twenty-one years ago for the purpose of caring for destitute children of the city of New York, and instructing them in useful trades. The boys spend part of the day in the class-room and part in the workshops. Here they are trained by professionals in such handicrafts as chair-making, tailoring, silk-weaving, printing and electrotyping. Specimens of the work done in some departments are exhibited, as also photographic views of the Institution and of the several workshops.

The School of La Salle.—To this institution are admitted—free of expense—a limited number of the most successful students of the Brothers' Schools, at Lyons, who desire to acquire a theoretical and practical knowledge of the local industries. The courses include modern languages, political and social economy, descriptive geometry, plane trigonometry and its applications to surveying, experimental physics, organic chemistry, and the various kinds of drawing and industrial design. The students are afterwards admitted to the laboratories and workshops, in which they are instructed in analytical chemistry, modelling, cabinet-making, and especially in silk-weaving, an important local industry. On satisfactorily completing the course, they receive a Certificate of Proficiency.

The Schools of St. Nicholas.—The Schools of St. Nicholas are conducted on a large scale. Owing to the great number of applicants, there is keen competition for admission. The boys are put through a regular course of instruction, particular attention being paid in the higher classes to subjects specially connected with Technology. After finishing the course, many of the boys find employment in city establishments, whilst others remain to complete their technical instruction in the workshops of the Institution. In these, which are fifteen in number, they are taught various kinds of carving (wood, stone), engraving (on wood and metal), cabinet-making, and printing, as well as the construction of scientific instruments, such as microscopes, telescopes, levels, &c. The visitor may see in the Exhibition specimens of the work done in several departments. The cooking in this establishment is done by steam. There are also a steam-engine and a Gramme dynamo-electric machine for the purpose of lighting up certain workshops, large rooms and corridors. The physical and chemical laboratories are also fitted up with a number of Edison's incandescence lamps. The object of this installation is chiefly to afford means of practically training the students in the principles and engineering of electric lighting. St. Nicholas has branch establishments at Issy and Igny, with an aggregate of over 2500 boys.

School Museums.—The Boarding Schools of the Brothers in France and Italy, besides specimens of art and ordinary class-work, contribute a number of objects illustrative of local Natural History, which were collected by the students on field-days, and classified by the Brothers.

The largest comes from Annecy in Savoy, and contains a collection illustrating the geology, mineralogy, flora and fauna of the Department, as well as analyses of the principal mineral waters, and specimens of the local industries. Dreux has sent a number of small museums showing the successive stages in the manufacture of needles, combs, and the like, the making of clocks and flutes, as well as the processes of mirror-making, wood-gilding, &c.

Notes in Shorthand.—In some of their Higher Schools the Brothers train the advanced students to make short-hand notes of their lectures; in others they themselves lithograph summaries of their lectures on science subjects. Specimens of such abstracts in Chemistry and Physics, are exhibited.

Exhibits from the United States, Canada and India.—The Brothers in America and India, notwithstanding the short notice they received, have contrived to send specimens of work done in their schools of various grades. The visitor may inspect, *inter alia*, writing-books form Rangoon; day-books and ledgers from Quebec and Montreal; a pen-and-ink sketch of H.R.H. the Prince of Wales, and business forms of all kinds from the La Salle "Penman Club"; plans of canal and railway cuttings from Baltimore; plots and surveys from San Francisco; a local school-museum from Memphis (Tennessee); literary Essays from Academies in New York and Philadelphia; and Theses, in various languages, from Colleges at Manhattanville (New York), St. Louis (Missouri), and Rock Hill (Maryland).

Further information may be had from the Principal of the Brothers' London establishment, St. Joseph's College, Clapham, S.W. (*Room No.* 5.)

1561. **CHARLES, A., Homes for Little Boys, Farningham and Swanley. Offices, Ludgate Circus, E.C.**—(1) Models of School and Home Buildings. (2) Examples of School Work. (3) Specimens of work done by boys in Printing, Upholstering, Carpentering, Tailoring, Needlework (various). (*Room No.* 13.)

1562. **RAGGED SCHOOL UNION.**—*Origin and Objects of the Union.*—This Union, of which the Right Hon. the Earl of Shaftesbury is the President, was established in April, 1844, for the purpose of federating and assisting schools that were being gradually started for the benefit of the very poorest and destitute children of London and other large centres of population. At that time there were 16—of what soon became known as Ragged Schools, which the Union was instituted to foster. Ordinary day and Sunday schools had not reached the lower stratum of society, and to these the active voluntary workers of these Ragged Schools directed their attention.

Progress of Ragged Schools.—One of the earliest ragged schools in London was established in Grays Yard, north of Oxford Street, in 1835. Other schools of a kindred character must have existed before then, and many more were gradually established all over the country. In 1841 there was opened in Aberdeen a ragged school, in which the children were fed as well as taught, and from this example there sprang up "Ragged Feeding Schools" in various parts of the country. In 1847, Dr. Guthrie, of Edinburgh, published his first Plea for Ragged Schools, and opened one on the Castle Hill, which accomplished excellent results. A Privy Council Minute in 1856 sanctioned a capitation grant of £2 10s. for every scholar fed in these schools, but this grant was withdrawn in 1859, and has not been renewed, the whole of the expenses being met by voluntary contributions. The prominent object of Ragged Schools has ever been to act upon the moral and religious condition of the waifs and strays brought within their fostering care, and concurrently with this to promote habits of honesty, industry, and other principles of good citizenship. To this end Sunday night schools were established, which speedily became week-day night schools, and finally free day schools. Since the passing of the Education Act, 1870, the establishment of school boards has largely superseded the day school instruction of ragged schools, but has not in any way diminished the necessity for the other multifarious agencies having for their object the social, moral, and spiritual advancement of the children and their parents. Moreover the action of ragged schools on the well-being of the lower classes is still needful, by fostering habits of industry, temperance, and thrift, by providing penny banks, clothing clubs, &c., and by the exercise of vigilant supervision in the sanitary condition of their dwellings. It is estimated that nearly 400,000 children have been rescued from lives of vice and possible crime, and assisted to become honest, respectable citizens, by the ragged schools and missions connected with this Union.

Statistics of Ragged School Work.—The present work of Ragged Schools may be deduced from the fact that there are now as many as 39,273 children, receiving religious instruction in 209 schools, from 3278 voluntary and 193 paid teachers; that there are 130 week night schools, 90 children's special services, 71 ragged churches and mission services, 36 parents' meetings, 100 school libraries with 23,834 volumes, and 95 Bands of Hope and temperance societies. Breakfasts are, moreover, given to the destitute and, in addition, there are sewing classes, and classes for the teaching of drawing, fretwork, woolwork, carpentering, and brigades of various kinds. In 1851, the happy expedient was hit upon by some gentlemen connected with the ragged schools of reviving the practice of boot cleaning in the streets. The experiment was successful. The Brigade receipts during the Exhibition year are said to have reached £656, and since then the corps have been greatly multiplied, while their earnings now amount to thousands of pounds annually. A good deal is done by ragged schools in the way of recreation, by means of magic lantern entertainments, concerts, services of song, exhibitions of flowers and of objects of industry, and prizes are awarded for faithful service in situations, to say nothing of winter dinners and treats, as well as day in the country in summer. The latter scheme is

being widened, by giving some enfeebled children a longer stay in the country with manifest benefit. The question of reading is not overlooked, and much attention is given to training in industrial pursuits. A feature worthy of note in connection with Ragged Schools is the remarkable growth of separate agencies, some of which have been generally adopted. A report will be gladly sent on application to John Kirk, Secretary, Exeter Hall, London, W.C. (*Room No.* 13.)

1563. ROYAL ALBERT ASYLUM FOR IDIOTS AND IMBECILES OF THE NORTHERN COUNTIES, LANCASTER (per G. E. SHUTTLEWORTH, B.A., M.D., &c., Medical Superintendent). Secretary (from whom Reports and other information may be obtained), JAMES DIGGENS, Lancaster.

A. Appliances for Sense Culture used in the Education of Imbecile Children.

In arranging the Exhibit in connection with this Institution, the leading idea has been to illustrate characteristic methods used in the training of the imbecile. No originality is claimed in respect of modes of teaching or of appliances shown, which indeed are now the common heritage of many kindred Institutions in various parts of the world.

Starting with the principle long since laid down by the late Dr. E. Seguin (the pioneer in this special work) that in Idiots and Imbeciles "the physiological education of the senses must precede the psychical education of the mind," and recognising with him the importance in the first instance of dealing with the sense of *touch*, we exhibit some simple appliances which serve to cultivate this sense, and at the same time to fix the attention and regulate muscular movements.

I. Bean-Bags, made of bright coloured material, are useful (1) to arrest the wandering gaze of the listless pupil, (2) to incite him when thrown at him, (*a*) to raise his hand to stop the bag, (*b*) to catch it in his fingers, (*c*) spontaneously to throw it back. Attention, common sensibility, reflex and voluntary muscular action are thus successively stimulated.

II. Peg-board, a board with perforations to be filled by pupil with metallic pegs, affords exercise for tips of thumb and fingers deficient in sensibility, and promotes due co-ordination of movements of the hand.

III. Pincushion with spotted cover. The pupil fixes ordinary pins into the spots, afterwards making simple design (as shown) with beads taken up on the pins. An excellent exercise for finer adjustments of thumb and fingers, defective in paralytic and other forms of Imbecility.

IV. Size and Form Boards, respective cavities in which are to be filled the corresponding loose pieces. First an exercise of sense of touch; secondly of *perception* of size and form. (N.B. *Names* of forms not taught at this stage.)

V. Domino-boards. Used in pairs and handled by pupils in imitation of pair in hands of Teacher, who places them successively in different relative positions. A good exercise in grasping, imitation, and simple ideas of relation.

VI. Graduated Rods, divided by transverse marks into inches (1 to 12), are arranged in series (like steps) by pupil, who thus gains rudimentary ideas of dimension. They may subsequently be used to demonstrate objectively the simple rules of arithmetic.

By such exercises as those above described the imbecile pupil gains tactile sensibility and dexterity; at the same time the faculties of observation and imitation are quickened, and the intelligence is gradually awakened. Similarly, whilst in the use of the following simple appliances, the exercise of the sense of *sight* in the discrimination of colours is the primary object, other faculties are simultaneously called into play.

VII. Colour Cups and Balls, used to train and test the pupil in *perception* of colours (not in *naming* them), two only, black and white, being first shown, the others being gradually introduced to the pupil till he can fill all the cups appropriately.

VIII. Colour Cubes, used for similar purpose, pupil following teacher's lead in turning uppermost in succession the various colours.

IX. Colour Discs, useful in testing pupil's powers of matching colours.

The senses of *taste and smell* are to be exercised by contrasting impressions on those senses of substances similar in appearance; e.g. for taste, white sugar and salt; for smell, coffee and snuff, distinguishing odorous from odourless flowers, &c.

Hearing and Speech require also to be specially exercised. Music has peculiar attractions for the imbecile pupil, and often forms a stepping stone to speech. Vocalisation is thereby encouraged, and articulation gradually follows.

X. A Table found useful in testing and exercising the defective *articulation* of imbeciles is submitted.

Physical Exercises, specially arranged to combat physical infirmities, as well as drill of a simple kind set to music, are most important in the training of imbeciles, but cannot well be illustrated objectively here.

Passing to the second class of objects exhibited, viz.:

B. Specimens of School-Work Produced by Imbecile Children;

it should be borne in mind that such specimens are chiefly remarkable as having been produced in spite of physical as well as mental defects in the pupils. Button-threading and bead-work have indeed been specially prescribed for patients suffering from spasmodic movements of the fingers; and some kindergarten employments, such as paper-weaving and picture-perforating, are also of service in such cases, incapacities being overcome by persevering effort.

I. Button-threading in series, as regards colour.

II. Beads threaded in series, forming exercises in colour and number. *Bead-work* by partially-paralysed children.

III. Paper-weaving, Picture-perforating and embroidery, and Chequer-drawing, by junior boys and girls.

IV. Series of Drawings (from Nelson's Royal Drawing Books) showing progress of imbecile lad, now aged 16.

V. Series of Illuminated Texts, showing skill in colouring, by imbecile lad, who when admitted six years ago (at age of 13) could not steady his hands to write or draw. (The original, from "Little Folks' Illuminating Book," is placed above pupil's copy in centre of sheet.)

VII. (a) Pencil Drawing from Copy, in 1878, *and (b) Original Freehand Design (in* 1884), by youth affected with spasmodic movements of fingers (*athetosis*), showing firmness acquired.

VII. First Copy-books and Recent Letters, showing progress made by imbecile pupils in writing and composition.

In a Training Institution for Imbeciles much of the school-work leads up to industrial occupation; for example, there are practical lessons in shop-keeping, bed-making, &c. We pass readily, therefore, to the third class of objects exhibited, viz.:—

C. Specimens of Handicraft Work Produced by Imbecile Children.

I. Garments (*Plain Sewing and Wool-work*), made by imbecile girls.

II. Stockings, Scarves, &c., knitted by junior boys.

III. Joinery-work, by imbecile lads. (Trays, picture-frames, ink-stand, and fretwork; the two latter by an imbecile boy of 15.)

IV. Boots made throughout by imbecile lads; also hand-closed "tops."

V. Garments made throughout by imbecile lads (Tailoring Department).

VI. Brushes bored, filled, and finished by imbecile lads.

VII. Door-mat made by imbecile lad.

Much out-door work of a useful character is done by imbecile lads in connection with the garden and farm. Of the salutary effect of suitable occupation ample proof is furnished by the improved condition of the working patients in such Institutions as the Royal Albert Asylum; and apart from economic considerations, it may emphatically be said in connection with the education and training of imbeciles,

"From labour health, from health contentment springs."

(*Room No.* 13.)

1564. **WESLEYAN EDUCATION COMMITTEE** (Secretary, **REV. DAVID J. WALLER**), **Westminster Training College, S.W.**—The Wesleyan Education Committee was formed in 1840. The day schools classed as Wesleyan in England and Wales number 854, with an average attendance of 130,000 scholars. The Committee have established two training colleges, one at Westminster for masters (117 students being now in residence), and one at Southlands for mistresses (109 students being now in residence). The practising schools attached to these colleges have an attendance of about 1400 scholars. The specimens of work exhibited in the cabinets are mainly from the children in these practising schools. The following statement explains the most important features of the various exhibits—(1) A Cabinet of objects collected and arranged with special reference to teaching the descriptive and commercial geography of England and Wales; also apparatus for explaining the phases of the moon eclipses, seasons, and the planetary system. This apparatus is "home-made;" it is remarkably cheap and of more service for teaching purposes than the complex appliances generally in use. The cost is affixed to each article. The manufacturing industries of the British Isles are made attractive subjects of instruction, by taking the most important of them and representing as far as necessary the various stages in the processes of manufacture. The articles have been collected from firms throughout the country, and in almost every instance have been supplied free of expense. (2) The work exhibited from the Westminster Practising Schools comprises—(*a*) Simple apparatus made principally by the teacher for demonstrating "the heat course" of the New Code. Utility and cheapness have been the objects aimed at. The scholars' exercise books upon this course are shown. (*b*) Scholars' work in wood, brass, tin, and iron. This branch of employment has been in operation during the past year, and simple optical instruments, such as the camera, magic lantern, and kaleidoscope, have been made by the boys under the

teachers' supervision. (*c*) The drawings, examination papers, copy-books, &c., are samples of the work done in these practising schools. The apparatus for mental arithmetic exercises in junior classes produces rapid calculation, and saves the teacher's voice. (3) The exhibits from the Southlands Training College and Practising Schools comprise—(*a*) A series of photographs showing the premises of the College and Practising Schools. These include views of the exterior of the college and its grounds, of the interior, showing the lecture hall, class-rooms, corridor, dining rooms, and dormitories; and also views of the interiors of the principal rooms of the girls' and infants' Practising Schools. (*b*) Ground plans: (1) the basement, showing students' model cookery kitchen, (2) ground floor of the College, (3) plan of the Practising Schools and playground. (*c*) Time table and statement, showing the college course of training. (*d*) Time tables of the Practising Schools. (*e*) Some specimens of needlework, executed by students as part of their ordinary college training. (*f*) Specimens of needlework executed by girls and infants attending the Practising Schools. These articles were prepared in the ordinary course of school work, and were shown to H.M. Inspector at his visit in April, 1884. (*g*) Specimens of Kindergarten work from the infants' school. (*h*) Exercise and other books illustrating the ordinary work of the schools. (*Room No.* 13.)

VAN MARKEN, J. C., JUN., Netherlands Yeast and Spirit Manufactory, Delft, Holland.—(1) Models and Diagrams illustrative of the teaching of practical manual work for children who attend the school belonging to the manufactory; school for apprentices and teaching of handicrafts for boys who have left school honourably; gardens and playground for children; public examinations and exhibitions of flowers grown by children, and of objects made by them. (2) A Table containing the results of the practical manual labour taught in the manufactory: objects of paste-board, carvings, plaitings and sawings, which the school boys and girls have made at home in their leisure hours, and also specimens of joiner's and smith's work made by the elder boys, the apprentices at the manufactory. (*See Netherlands Section, Western Central Court.*)

HYGIENIC LABORATORY.

(Annexe to City and Guilds Institute.)

Director—PROFESSOR CORFIELD, M.A., M.D. (Oxon), F.R.C.P.
Chief Assistant and Demonstrator—Mr. CHARLES E. CASSAL, F.I.C., F.C.S.
Assistant—Dr. W. FRASER, San. Sci. Cert., Cambridge.

THIS Laboratory is designed to show, as far as is possible in a temporary building, the arrangements suitable for the examination, from a Public Health point of view, of water, air, foods and drinks, soils, disinfectants, sanitary appliances, and other articles of Hygienic interest. In front of the Laboratory proper is an ante-room in which are arranged cases of apparatus of various kinds for exhibition and use in the Laboratory, and also a model laboratory table.

Projecting into the ante-room and entered from the Laboratory is the balance room, which should be separate from the Laboratory, but is here merely a glazed compartment, so that the operations conducted in it may be visible to the visitors; the balances, lent by Mr. Oertling, are supported on a pier with a solid foundation of masonry to prevent vibration; most of these instruments are very delicate, being capable of weighing to the one-thousandth part of a grain with comparatively heavy loads on the pans.

On each side of the balance room, in the ante-room, is a table on which are placed microscopes with various specimens for examination.

In the body of the Laboratory are placed three working-tables with bottle-racks above them, and drawers and cupboards for apparatus underneath; and around the sides, tables for microscopic work and distillations, with shelves for apparatus and bottles containing reagents, a furnace with sand bath on the top for evaporating purposes, and two glazed draught cupboards in which operations producing fumes may be conducted; these cupboards are provided with flues in which jets of gas are burning in order to produce currents of air which convey the fumes outside the building; the laboratory tables are provided with appliances for the supply of gas and water, and with sinks, the waste pipes of which are connected with a stoneware drain discharging into an open trapped gully outside the Laboratory, and having an inspection opening, with a ventilating pipe carried above the eaves, at its upper end.

The operations conducted in the Laboratory are sufficiently described in the handbook entitled "Public Health Laboratory Work," and consist chiefly in the examination by chemical, microscopical and other means of specimens of water and air wtth the view of determining the nature and amount of various pollutions, and the analysis of articles of food and drinks to ascertain their quality and to detect the presence and estimate the quantity of impurities and adulterations, also the examination of filtering materials and of disinfectants, and the detection and estimation of poisonous ingredients, as such as arsenic, in the colouring matters used for decorative purposes, clothing, &c.

Specimens of accurately graduated flasks, burettes, thermometers and other apparatus used in the operations conducted in the Laboratory may be seen in the cases and on the tables, and also in actual use.

BIOLOGICAL LABORATORY.

(*Central Institution of the City and Guilds of London. Room No.* 15.)

Director—W. WATSON CHEYNE, F.R.C.S.

The objects of this Laboratory are to show the minutest forms of plant life, especially those associated with disease, their life-history, and the methods of investigating them.

Some of these minute bodies are injurious to man, animals, and plants.

(*a*) In man we have—The *Schizomycetes* of anthrax, glanders, tuberculosis, erysipelas, acute necrosis, typhoid fever, pneumonia, recurrent fever, leprosy, cholera, &c.

Actinomycosis, saccharomyces albicans (thrush), fungi of diseases of the hair and skin, &c.

(*b*) In animals—*Mammalia.*—Bacteria of anthrax, glanders, tuberculosis, septicæmia, &c.

Actinomycosis, fungi of diseases of hair and skin.

Aves.—Fowl cholera, aspergillus, &c.

Pisces.—Salmon disease (saprolegnia).

Mollusca.—Disease of oysters.

Arthropoda.—Disease of crabs (saprolegnia), bees (bacteria), silkworms (micrococci), flies (Empusa muscæ), &c.

(*c*) In plants—Fungi of the diseases of cultivated plants: Rust, bunt, mildew, disease of potatoes, vines, coffee-trees, orange-trees, vegetables, &c.

Diseases of forest trees: Canker, rot, &c.

Diseases of corn, &c.: Ergot, &c.

Some are of use in the production of articles of food by causing fermentation;—as alcohol (yeast), vinegar (bacterium mycoderma), sour milk (bacterium lactis), cheese (bacillus of rennet, penicillium of Stilton, Roquefort), &c.

Some are of use in decomposing dead animal and vegetable matters, as the bacteria of putrefaction.

Some fungi are edible, as boletus, agaricus, cantharellus, moschella, &c.

Some are poisonous, as amanita phalloides and muscaria, boletus satanas, kelvella esculenta, scleroderma vulgare, &c. &c.

In addition to the exhibition of many of the above-mentioned forms of fungi, the methods of cultivating and studying them will be shown; the methods of investigating air, water, and soil, with a view to determine the number and varieties of the fungi present; the methods of determining the effect of various reputed disinfectants on the life of these minute fungi; the methods of straining them and demonstrating their presence in the tissues; and apparatus for microphotographing.

Most of the bacteria shown here have been obtained from Dr. Koch's Laboratory in Berlin, as also several maps showing the prevalence of various diseases in different towns, &c. Mr. Plowright and Mr. Worthington Smith have sent a large number of specimens of diseases of plants.

The following have been good enough to lend to the Executive Council Apparatus for use an exhibition in the Biological and Chemical Laboratories:—

BAKER, C., 244 High Holborn, W.C.
BECK, R. & J., 68 Cornhill, E.C.
BECKER, F. E. & CO., 34 Maiden Lane, Covent Garden, W.C.
BREFFITT, E. & CO., 83 Upper Thames Street, E.C.
CETTI, E., 36 Brooke Street, Holborn.
CHRISTY, THOMAS, & CO., 155 Fenchurch Street, E.C.
COPPOCK, CHARLES, 100 New Bond Street, W.
DEANE & CO., 146 King William Street, E.C.
DOULTON, HENRY, & CO., Lambeth, S.E.
FRAZER, ALEXANDER, 7 Lothian Street Edinburgh.
HEYWOOD, JOHN, Ridgefield, Manchester.
HOWE, JAMES & CO., 73 Farringdon Street, E.C.
OERTLING, L. & CO., Turnmill Street, E.C.
ORME, J. & CO., 63 Barbican, E.C.
POTHS, H. & CO., 50 Leadenhall Street, E.C.
POWELL & LEALAND, 170 Euston Road, N.W.
SWIFT, JAMES, 81 Tottenham Court Road, W.
TOWNSON & MERCER, 89 Bishopsgate Street Within, E.C.
WIESNEGG, M., 64 Rue Gay Lussac, Paris.

The whole of the Working Benches, Tables, &c., in the Chemical Laboratory have been specially constructed and lent by

GEORGE M. HAMMER & CO., 370 Strand, W.C.

FRENCH SECTION OF EDUCATION

ORGANISED UNDER THE AUSPICES OF THE MINISTÈRE DE L'INSTRUCTION PUBLIQUE ET DES BEAUX ARTS.

INTRODUCTION.

Elementary Education in France.

The principal dates in the modern history of Elementary Education in France may be reduced to the following:—1793, when the *Convention Nationale* elaborated and began to carry out a complete scheme of popular instruction, soon mutilated by the subsequent governments; 1833, when Guizot reorganised a real system of public teaching and a body of efficient public teachers; 1848, when Carnot, during a too short tenure of office, tried to make elementary education compulsory and to improve the position of the teacher; 1867, when M. Duruy, a well-intentioned reformer, reorganised the elementary schools for girls, and again ameliorated the situation of the teacher; 1879, when M. Jules Ferry, under M. Waddington's administration, was called to the Education Department, and introduced to Parliament a series of great bills which bid fair to completely remodel the national life of France, not only by insuring the instruction of the masses, but also by assimilating the primary studies in elementary schools to those of the lower forms in secondary schools, and thus preparing, through the education of children, the "rapprochement" of the classes of society.

The wide programme of popular education which had been sketched out by the National Convention, and resumed by the Republic of 1848, has been the basis on which French educators and legislators have worked since the definitive consolidation of the Republican Government in 1877. In less than five years nearly all that which had been dreamed of by the Conventionnels concerning primary education has been carried out with a remarkable logic in plan and an unparalleled liberality in expense. The money which neither the Liberals of the Restoration, nor those of the Monarchy of July, nor the *Corps législatif* of the Second Empire had been able or willing to find for popular education, the Parliament of the Third Republic has not feared to demand of the State and the municipalities seven years after a terrible foreign and civil war, when the burden of taxes levied to pay off the war contributions to the conquerors were still pressing heavily on the nation. One after another were passed, to mention only the most important, the law constituting a school building fund (*caisse des écoles*, law of 1 June, 1878); the law requiring clerical and lay teachers of both sexes to be provided with a certificate (*brévet de capacité*, law of 16 June, 1881); the law rendering elementary instruction free (*gratuite*, same date); and the law declaring attendance in primary schools compulsory (*obligatoire*, law of the 28 March, 1882).

It has been rightly noticed that this new system of educational laws bears the undeniable stamp of the French race. It is evident that they have been prompted by all the instincts and aspirations characteristic of modern France, her ambition of national unity, her belief in the possibility of gradually equalising the rights of all members of the Commonwealth, her greater confidence in lay than in ecclesiastical corporations, and also her tendency to appeal to the State not only for encouraging and controlling, but also for actually founding all organisations connected with the public interest.

Leaving out the history of popular education, this notice will be confined to summarizing the present condition of primary education in France.*

* Several passages of this notice, which only expresses individual views, are borrowed by permission of H.M. Commissioners for Technical Education from their first report issued in 1882, and second report, 1884, 2 vols.

Primary education is given in the following schools:—I. Maternal and Infant Schools; II. Elementary Primary Schools; III. Higher Primary Schools and Manual Apprenticeship Schools.

Infant Schools.

A. Écoles Maternelles.—The *écoles maternelles* (infant schools) formerly called Shelter Schools (*salles d'asiles*), the organisation of which is regulated by the Decree of August 2, 1881, aim principally, besides affording shelter to children too young to attend the primary school, at training after the Frœbelian method, and at favouring the physical, intellectual and moral development of children without fatigue or constraint. Children are admitted in them from the age of two years and remain in them until seven. The training of children in infant schools includes:—(1) The elements of moral education, outlines of common objects, the rudiments of drawing, writing and reading, practice in speaking, the elements of natural history and geography, tales within the reach of children's intelligence; (2) Training the hand; (3) Singing, and graduated gymnastic movements.

"An *école maternelle* is not a school in the ordinary sense of that term; it forms a means of transit from home to school, it preserves all the gentleness and indulgence of home while initiating scholastic work and regularity. The success of a mistress in an infant school should not then be estimated solely by the amount of knowledge imparted, by the standard of education obtained, or by the number and duration of the lessons, but rather by the amount of good influences to which the child is submitted, by the pleasure with which it is taught to regard school, by the habits of order, propriety, politeness, attention, obedience and intellectual activity it has contracted, so to speak, while playing." Translation of Minute of 28 July, 1882.

Good health, a sight, hearing and feeling already trained by a graduated series of little amusements, childish but lucid ideas on what will later on be the primary instruction, a commencement of habit and disposition to listen and observe, such should be the acquirements of a child who leaves the maternal school.

The pedagogic organisation of these schools, and the plan of lessons between which time must be divided in them, have been determined by the Minute of July 28, 1882. (See cl. 47.)

Regulations for infant schools are drawn up by the *conseil départemental* in each Department, framed from regulations issued by the Minister of Public Instruction, with the assent of the *conseil supérieur.*

In every school which receives more than fifty children, the head-mistress (*directrice*) must have an assistant-teacher (*sous-directrice*). The head-teachers are appointed by the Prefect on the nomination of the Chief Inspector (*Inspecteur d'académie*), and are chosen as much as possible from among the assistants. They must be twenty-one years of age and provided with the *certificat d'aptitude à la direction des écoles maternelles.**

Programme of the examination for this certificate.—1. Dictation, questions in arithmetic, elementary composition, drawing in outline on the slate. 2. Questions on the principles of moral education, reading, geography, history of France, simple questions in natural history and hygiene with application to object lessons. 3. Class teaching in an infant school, where the candidate takes the part of head-teacher during a part of the sitting and that of assistant-teacher during the other part.

The under-teachers must be eighteen years of age, and provided with the same certificate.

The training colleges for female teachers, besides providing teachers for the primary schools, are also intended to recruit the teaching staff of the infant schools (Decree dated 14 January, 1884).

Committees of lady patronesses, under the presidency of the *Maire*, may be formed in each parish (*commune*) where there are infant schools. The members of those committees of patronage are appointed by the Prefect on the recommendation of Chief Inspectors of the schools. The only duties of this committee are to see that the sanitary regulations are duly carried out, and also to see that funds or donations collected for the children are properly employed. There are lady inspectors of infant schools appointed by the Minister of Public Instruction and lady chief

* In 1883, there were 1,977 head-mistresses and 852 assistant-mistresses who were uncertificated, and of these 2,685 belonged to religious orders.

inspectors (*Inspectrices générales*) appointed by decree of the President of the Republic, on the nomination of the Minister. They must fulfil the conditions relating to age and qualifications, as prescribed by the Decree of August 2, 1881, art. 8, and the Minute of December 23, 1882. Special instructions concerning the construction of infant schools have been issued by the *Comité des bâtiments scolaires* (Bulletin administratif de l'instruction, 1882, No. 507, page 424).

Education in infant schools is free (law of June 16, 1881).

B. (*Écoles enfantines*).—There are two kinds of *écoles enfantines*:—1. Schools in the large towns, forming a transition between the *école maternelle* and the primary school. 2. In rural districts, schools taking the place of the *école maternelle*, and preparing young children of both sexes for the special primary school for boys or girls. They must be directed by lady teachers provided with a *certificat d'aptitude à la direction des écoles maternelles*, or the lower grade certificate (*Brevet de capacité élémentaire de l'instruction primaire*) for the programme of education in the *écoles enfantines*. (See Law of 16 June, 1881; Minute of 27 July, 1882; and Circular of 28 January 1884.) For specimens of occupations and work of children in French infant schools, see especially Ville de Paris, and Inspection Académique de la Gironde.

Primary Schools.

Elementary Primary Schools.—Every parish (*commune*) must maintain one or more primary schools (Law of 15 March, 1850, art. 36.) Every parish of 500 inhabitants and more is bound to have at least one public primary school for girls distinct from the boy schools (Law of 10 April, 1867, art. 1).

The number of public schools for boys and girls to be established in each parish is fixed by the *conseil départemental de l'instruction publique* on the advice of the municipal council (Law of 10 April, 1867, art. 2).

In parishes the population of which is under 400 inhabitants the schools are mixed, and may receive boys and girls together.

Education in public primary schools is free (Law of 16 June, 1881).

The pedagogical organisation of the primary schools and the plan of studies to be followed in them have been regulated and determined by the Minute of July 27, 1882. (*q. v.*)

Primary instruction is divided into three courses.

1. *Elementary* (lasting two years, for children aged 7 to 9).
2. *Intermediate* (*cours moyen*) lasting two years for children aged 9 to 11.
3. *Superior*, lasting two years, for children from 11 to 13 years of age.

The departmental council fixes the regulations of the schools in each department from the general instructions of the official regulations decided on by the education minister with the assent of the *conseil supérieur*.

In each course the children must receive a threefold training, consisting of: 1. Physical education. 2. Intellectual education. 3. Moral Education. (*See cl.* 48, *synoptic table, showing the detailed organisation of primary studies, their objects, methods, and programmes.*) The ordinary obligatory curriculum of intellectual instruction comprises reading, writing, arithmetic, the elements of the natural sciences, geography, history of France, drawing and music, and is strictly carried out in all the town schools and in many of the country ones.* Some of the schools have cabinets of minerals, botanical specimens, science and art museums, and nearly all possess graphic illustrations of physical and political geography, raw materials and manufactured products. The simplest of those illustrative collections (*e.g.* those of Deyrolle) are supplied gratuitously to the poorer communal schools by the Education Department. Instruction in manual work has of late been introduced into a considerable number of the primary schools. (See below Cl. 50, École de la rue Tournefort, and 53 École Normale Speciale de travail manuel.) Almost all the primary schools of Paris and large towns (Lyons, Marseilles, Rennes, &c.) have workshops attached to them. Special inspectors of manual work have been appointed, who determine the quantity of work to be done and judge of its quality.

* A new inquiry into the teaching of drawing in primary schools and normal colleges, has lately been started by order of the present Education Minister, M. Faillières. See circulars and printed forms issued by the Department

The whole of the instruction in a class or division, as the case may be, is generally conducted in a separate room. The hours of instruction are from 8 A.M. to 4 P.M., with one and a half hour's interval at noon, and one hour from 4 to 5 for gymnastics. The same master gives all the lessons to a class, except music, gymnastics, and occasionally drawing, in the male, and needlework in the female schools. Pupil teachers, as assistants, are permitted by law, but the employment of them has been generally discontinued.

In many of the large cities the children take their dinners in the school. In some cases a kitchen is provided, and the whole or a portion of the cost of preparing the food is borne by the school authorities. In the poorer districts of Paris a portion of the cost even of the food itself is defrayed by the municipality, and in extreme cases the authorities provide boots and clothing for the children on the recommendation of the master.

Corporal punishment is strictly forbidden in French schools of every grade.

Primary instruction is compulsory for children of both sexes, including the blind and deaf mutes, from the beginning of the seventh to the end of the thirteenth year.

In every commune (there are about 36,000 communes in France) besides a school attendance board there must be a school board, composed of the mayor, of certain persons to be appointed by the inspector of the *académie*, of the inspector of primary schools of the department, and of a number, not exceeding one-third of the whole board, of persons elected by the council of the commune. (There are special provisions as to the composition of this board, in the case of Paris and Lyons.)

Children may present themselves for examination for the "*certificat d'études*" at the age of 11, and, on passing it, are to be exempted from further compulsory primary instruction.

Programme of the Examination for the Certificate of Primary Studies.

This title belongs exclusively to the diplomas conferred by the cantonal commissions, which commissions are appointed by the rectors of the academies, the names being submitted to them for the purpose, by the chief inspectors (*inspecteurs d'académie*) who meet every year, either in the principal town of the canton, or in some central commune, previously selected; the primary school inspector of the district being as a matter of course associated with them.

At the appointed date, and within the time prescribed by the chief inspector, every master or mistress prepares a statement for each school, giving a list of the candidates of both sexes for the certificate in question. This statement (which must not contain the name of any candidate who is less than 12 years of age on the 1st of October in the year in which the examination takes place) bears the name, christian name, date, and place of birth, present residence, and signature of each candidate; it is counter-signed by the mayor and forwarded at the proper time to the primary school-inspector.

The examination for the certificate of primary studies is composed of both written and oral tests.

The written tests which take place with closed doors under the superintendence of the members of the commission comprise, 1st, a dictation of not more than twenty-five lines, which may at the same time serve as an examination in writing. 2nd, two questions in arithmetic, involving sums in calculation and the metric system with appropriate answers (*solution raisonnées*). 3rd, a composition of a simple kind (story, letter, &c.) Little girls have, in addition to this, to do some plain needlework under the supervision of a lady who is selected for this duty.

Failure in any one subject excludes the candidate. The maximum number of marks obtainable being fixed at ten for each test, only those boys are permitted to take part in the oral examination who have obtained a minimum number of twenty marks (in spelling, writing, arithmetic, and composition); while girls must obtain at least twenty-five marks (in spelling, writing, arithmetic, composition, and needlework).

The oral tests, which take place in the presence of the masters and mistresses, comprise, 1st, explanatory reading; 2nd, the analysis of a sentence read out, or written on the black board; 3rd, the elements of the history and geography of France; and 4th, questions in practical applications of arithmetic and the metric system. Each of these subjects also may be marked from 0 to 10.

The marks awarded for the oral tests are added to those secured in the written examination, and no one is finally certified, as being qualified to receive the certificate, who has not received at least half the total number of marks obtainable in the two classes of tests; say a total of forty marks in the case of the boys, and forty-five marks in the case of the girls.

In addition to these subjects, the examination may include an exercise in outline drawing and questions in agriculture. Mention is made in the certificate of such supplementary subjects for which the candidate succeeds in obtaining not less than five marks.

No examination fees of any kind are payable.*

All children whose parents do not give notice that they are receiving instruction at home, or at a public or private school, which they must name, are to be entered by the *maire* on the books of some public school.

Proper attendance-books must be kept by all schools, and absences reported by the head masters.

Private schoolmasters not attending to this regulation may be reprimanded or suspended by the departmental council.

In case of irregular attendance the persons responsible for the children shall be liable to be reprimanded, and, upon the repetition of the irregularity, to have their names posted on the door of the *mairie*. If the offence is again repeated the primary inspector shall summon the parent or guardian before the *juge de paix*, and he shall be liable to the punishments imposed on police offences by 479, 480, and the following articles of the *code civil;* article 463 is also applicable to them. Irregularity of attendance is defined as consisting of four absences in a month from one or both of the daily attendances.

The school board may, subject to the consent of the departmental council, exempt children employed in trades or in agriculture, from one of the two daily attendances.

Children therefore can only be employed as half-timers in trades and agriculture, under the age of 13, by the joint consent of the commune and of the department, unless, at or above the age of 11, they have obtained the "*certificat d'études.*"

All children educated at home are to be examined annually by a committee selected by the inspector of the *académie*, and if the examination is not satisfactory the child must be sent to a public or private school to be designated by the parent.

Higher Primary Schools.—Those schools (Laws of 16 June, 1879, 27 January and 11 Dec. 1880, Decree of 15 January, 1881) consist of—1st, Course of one year duration annexed to primary schools and termed *cours complémentaires;* 2ndly, Of higher primary schools proper, having a special staff and comprising at least two years of studies. *For the programme of the higher primary schools* and of the Écoles manuelles d'apprentissage, see the Minute of January 15, 1881.

Competitive examinations for State Exhibitions tenable in Higher Primary Schools are held annually. The programme of these examinations comprises:

French composition, reading, with questions on grammar or parsing of a sentence, questions on authentic history, geography of France, moral and civil instruction. For the candidates of the 2nd series the examination includes dictation, composition, drawing, reading, with questions in grammar, parsing and analysis of a sentence, questions in arithmetic and plane geometry, French history, general geography, moral and civil instruction, and the elements of the physical and natural sciences (Minute of November 23, 1882).

All pupils having obtained a state exhibition (*Bourse de l'État*) are required at the end of their regular course of studies to pass the examination for the certificate of higher primary instruction.†

Teaching Staff.

Male and female teachers are appointed by the prefect, on the nomination of the chief inspector of public instruction (*inspecteur d'académie*).

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* By decrees dated 16th of June, and the 24th of December, 1880, and circulars dated 27th September, 1880, and 27th January, 1881.

† In summing up their views on French schools the English Royal Commissioners on Technical Education, vol. I. 1884, remark that "gratuitous higher elementary, which includes technical instruction, is being extended in many of the large towns, and the sums devoted in the State and Communal budgets to the creation and maintenance of schools, have increased enormously. Instruction in the use of tools is now very general in the primary schools of Paris."

The appointments of assistant teachers (*instituteurs et institutrices adjoints*) must be approved by the prefect, they are nominated by the head-teachers, with the assent of the *inspecteur d'académie.*

There are two standards for primary education; the second grade or elementary certificate, and the first grade or higher certificate.

The candidates for an elementary certificate must be at least sixteen years of age. The examination includes, 1st, a page of writing, dictation or orthography, French composition, the solution of two arithmetical questions, and, for the girls, some needlework besides; 2nd, French and Latin reading, the analysis of a phrase, questions in arithmetic and on the metric system, questions on the elements of history and geography of France (Decrees of 4 January, 1881, and July, 1882; Minute of 5 January, 1881).

Candidates for the higher certificate must have obtained the elementary certificate and be seventeen years of age. The examination includes, 1st, exercises in arithmetic and geometry and in physical and natural sciences, a paper on the French language and literature, or history, or geography, or moral or civil education, and a paper on drawing; 2nd, questions in the mathematical sciences, physical and natural sciences, history of France, general history and geography, the French language, singing and gymnastics. The subjects of this examination must not in and case go beyond the programme of education for the primary training colleges (Decrees of 4 January, 1881, 21 July, 1882; Minute of 5 January, 1881.

A new title complementary to the two certificates of capacity and called *Certificat d'aptitude pédagogique* has been created, in order to test more particularly the fitness of male and female teachers to the management of schools containing several classes. The conditions of competition for the certificate are: To be at least twenty-one years of age at the time of the examination; to have had for two years experience in teaching since the passing of the examination for the *brevet élémentaire.* The examination for the *certificat d'aptitude pédagogique* includes, besides an essay in French on school management and methods of teaching, an oral correction of school exercises, and a class teaching either on an object lesson or on moral and civic instruction, the French language, geography, history, arithmetic, or agriculture (Decree of 4 January, 1881; Minute of 5 January, 1881). School inspectors are particularly entrusted with the oversight of primary schools. School inspectors are appointed by the Minister of Education from among persons who have obtained a special certificate of fitness for those functions.

The examination for this certificate, for which women may compete, includes essay writing, 1st, on a subject of pedagogy; 2nd, on a subject of school management, commenting on a passage taken from the text appointed to be prepared, &c., &c., and practical tests, consisting in the inspection of a class in either an elementary school or training college, with verbal report on it (Decree and Minute of 23 December, 1882). For the regulations concerning the construction of school houses see special instructions adopted by the Comité des batiments scolaires (bulletin administratif de l'instruction publique, 1882, No. 507, p. 430).

Statistics.

In 1882–83 there were in France 77,302 elementary primary schools for boys and girls, of which 64,510 were public schools, and 12,792 private. The number of public teachers was 129,657, of which 92,300 teach in public schools, and 37,357 in private ones. The number of pupils in 1882–83 was 5,432,151, of which 4,409,310 were in public schools and 1,022,841 in private schools. The general outlay of the State for primary education amounted in the same year to 94,881,942 fr., Whereas in 1867 the percentage of the conscripts who were unable to read and write was as high as 23 per cent., it has fallen in 1882 to 13·1 per cent. Of the 129,657 teachers in public and private primary schools, there were only, in 1883, 21,781 that were uncertificated (20,132 of whom belonged to religious orders). (See in *City Guilds Institution, Room* 9, the Statistical Maps of Education in France, exhibited by the Pedagogic Museum.)

Training Colleges for Male and Female Teachers of Primary Schools.

Every department must be provided with a training college for male teachers and a training college for female teachers, sufficient for securing the recruiting of the staff of national schools, (Law of August 9, 1879, art. 1.)

The training colleges for female teachers, in addition to training mistresses for national schools, train also teachers for maternal and infant schools. All have a primary school attached to them as well as a normal course for maternal schools.

There is, at the end of each academical year, a competitive entrance-examination to the training colleges in all departments of France and Algeria. Every candidate must be fifteen years at least, and no more than eighteen years, and must be provided with the certificate of primary elementary studies; he must engage to remain ten years in public tuition. Board and tuition in primary training colleges is free.

The entrance examination consists of five written ordeals, dictation, an exercise in handwriting, a French essay, the solution, supported by reasoning and proof of one or several questions in arithmetic and the metric system, a composition in drawing; of a *vivâ voce* examination, in which only those candidates take part who have gone successfully through the written ordeal; this includes the French language, arithmetic and the metric system, the elements of the history of France, geography, the recapitulation of a lecture given by a professor of the training college. Candidates, whether male or female, have also to pass in music and singing, and gymnastics, male candidates having besides to pass in military drill and exercises, and female candidates in sewing (Minute of Jan. 6, 1882). The course of studies lasts three years. The colleges, except in special cases, receive only boarders.

The course of education in training colleges includes 1st, moral and civic instruction; 2nd, reading; 3rd, handwriting; 4th, French language and elements of French literature; 5th, history, and especially French history up to the present period; 6th, geography, and especially that of France; 7th, arithmetic and metric system, elements of algebra and book-keeping; 8th, geometry, land surveying and levelling (for male teachers only); 9th, the elements of physical sciences with their chief applications; 10th, the elements of natural sciences with their chief applications; 11th, agriculture (for male teachers), domestic economy (for female teachers), horticulture; 12th, drawing; 13th, singing; 14th, gymnastics and (for male teachers) military drill and exercises; 15th, manual work (for male teachers), needlework for female teachers; 16th, pedagogy; 17th, (optional) one or more modern languages. The study of instrumental music may be authorised by the rector on the application of the directors of the colleges (Decrees of July, 1881 and January 9, 1883).

The directors and lady principals of training colleges are appointed by the Minister of Education; they must be provided with the *certificate of aptitude* for the management of training colleges (Decrees of July 29 and 30, 1881). This certificate is granted, after an examination to which are admitted all candidates who are at least 25 years old, and who are provided with the certificate of aptitude for a professorship in the training colleges, unless they are provided with the diploma of the *agrégation of the lycées*, or of Licentiate of Literature, or of Science, or of Bachelor of Arts and Bachelor of Science (mathematics and physical and natural sciences) combined; for the latter diploma may be substituted the diploma of bachelor of the *Enseignement Secondaire Spécial*. The examination includes an essay on a question of pedagogy, a composition on a subject of school administration, the explanation of a passage from one of the authors selected, the explanation *viva voce* of a question bearing on one of the points of a syllabus drawn up by the Minister of Education; finally, as a practical test, the inspection of a class of a training college or of a primary school, and *vivâ voce* report thereon (Decree and Article of December 23, 1882).

Instruction in training colleges is given, 1st, by professors appointed by the Minister, and provided with the *certificate of aptitude* to a professorship in training colleges, either in the section of literature or in the section of science; 2nd, by assistant masters or mistresses, provided with the *brevet supérieur de capacité* (higher certificate) of primary instruction and of the certificate of pedagogic aptitude, and who have been appointed by the Minister; 3rd, by auxiliary professors and special masters, appointed or delegated by the Minister (Decree of July 25, 1883).

The certificate for aptitude to a professorship in training colleges is obtained after an examination, to which all candidates over 21 years old are admitted, who have been engaged at least two years in public tuition and are provided with the diploma of Bachelor of Arts or of Bachelor of Science, or of the *Brevet de capacité* (certificate of capacity) of the *Enseignement Secondaire Spécial*, or of the higher certificate of primary instruction. The written part of the examination

includes: 1st (in the section of literature) an essay on a question of literature, grammar, or history and geography, an essay on a question of psychology or ethics, an essay on a question of pedagogy. 2nd (in the scientific section) an essay on a question of mathematics and the execution of geometrical drawing, an essay on a question of physics, chemistry or natural history with their applications, an essay on a question of method applied to the teaching of science. The *vivâ voce* examination includes the correction, supported by reasoning and proof, of an exercise done by a student of a training college, and the reading, with explanations, of a page from one of the authors selected.

The practical ordeal consists in a lecture given to a division of students, on a question drawn by lot (Decree of June 5, 1880; Minutes of December 26, 1882, and July 20, 1883).

There are at present in France 86 training colleges for masters, and 57 colleges for mistresses in primary schools. Each college has three grades, and each grade contains as a rule 15 students; the total number of students in the training colleges is therefore about 6435.

HIGHER TRAINING COLLEGES FOR PRIMARY INSTRUCTION (ÉCOLES NORMALES SUPÉRIEURES D'ENSEIGNEMENT PRIMAIRE).

1*st College at Saint-Cloud* (*Seine-et-Oise*).—This college is destined to train professors for the training colleges of primary instruction (for male teachers) (Decree of Dec. 30, 1882). The course of instruction consists of the subjects taught in the ordinary training colleges. (Decrees of July 29, 1881; Jan. 9, 1883, and Minute of August 3, 1881.)

This college, open to boarders and day scholars, is entirely free, and has its students recruited by a competitive examination. The students are divided into two sections: science and literature. The entrance examination is held once a year. All candidates are admitted to it, who are not less than 20 nor more than 25 years old on the 1st of October of the current year, who have engaged to remain 10 years in public tuition, are provided with a medical certificate declaring their fitness for educational duties, and who are provided with the higher certificate of capacity of primary instruction, or of the degree of Bachelor of Arts, or of Science, or of the certificate of capacity of the *Enseignement Secondaire Spécial*. The examination consists of written papers and of *vivâ voce* questions. The written examination includes 1st (section of literature), a French essay, an essay on a question on French history, which may be accompanied by geographical questions, an essay on a question of pedagogy; 2nd (scientific section), an essay on a question of mathematics, an essay on questions of physics, chemistry and natural history, an essay on a question of pedagogy.

The *vivâ voce* examination consists of questions in reading, correction of exercises, explanation, after a short preparation, of a question set to the candidate. (Minute of Dec. 30, 1882.)

The course of study lasts two years, at the end of which the students are required to come forward to the examination for a certificate of aptitude for a professorship in training colleges of primary instruction.

2*nd, College at Fontenay-aux-Roses* (*Seine*).—This college is open to ladies only, and is intended to prepare lady-professors for training colleges of national school-mistresses. It may receive also, under specified conditions, students, already provided with the certificate of aptitude for a professorship in training colleges, who wish to prepare themselves for the certificate of aptitude for the directorship of training colleges. (Minute of Dec. 24, 1880.)

The college, which is entirely free, has its students recruited by competition. The students are divided into two sections, scientific and literary. Candidates must be either married or widows, be 20 years at least and no more than 25 years old on the 1st of September of the current year, possess the higher certificate of capacity of primary instruction, contract the engagement to remain ten years in public tuition, and produce a medical certificate declaring their fitness for educational duties.

The entrance examination is similar to that set for the students of the college at Saint Cloud. In the final order, special stress is laid on the knowledge which candidates may evince of the elements of the English and German languages. (Circular of May 8, 1884.)

The course of studies lasts two years, but will soon be extended to three years. (Circular of May 8, 1884.)

The syllabus of this college includes: 1st, a course of lectures on psychology and ethics applied to education, and the history and examination of educational systems; 2nd, the

subjects taught in training colleges of primary instruction; 3nd, lectures given by the students and practical exercises in the college itself, as well as in primary schools, training colleges, etc.; 4th (for the candidates who wish to become directresses of training colleges), a course of lectures on scholastic legislation and administration. (Minute of Dec. 24, 1880.)

The students are required, at the end of the course, to come forward for the examination for which they have attended the college lectures.

In connection with this college is the *École Pape-Carpentier*, established at Sceaux (Seine), which is intended to train mistresses and assistant mistresses for the normal courses of infant schools in connection with training colleges of national school-mistresses. The students of this school attend the lectures of the college at Fontenay-aux-Roses.

The school is entirely free, and has its students recruited by public competition. Candidates must be at least 20 years and not more than 30 years old, and possess, in addition to the certificate of aptitude for the direction of infant schools, the higher certificate of capacity for primary instruction, or the elementary certificate, completed by the certificate of pedagogic aptitude, and have contracted the engagement to remain ten years in public tuition.

The entrance examination consists of an essay on a question selected from the syllabus of infant schools, an essay on a question of methods applied to the education of infants, interrogations, reading with explanation, corrections of pupil teachers' exercises, lectures given in an infant school.

The course lasts one year, and is followed by an examination which all students must attend. The course of studies includes: 1st, lectures on psychology and ethics applied to education, and the history and examination of educational systems relating to infants or young children; 2nd subjects taught in the normal courses of maternal schools; 3rd, lectures and practical exercises in the school itself, as well as in the maternal schools and infant schools; 4th, notions on the legislation and administration of maternal schools and infant schools. (Decree of July 27, 1882.)

3rd, Special Training College of Manual Work.—This college, founded in Paris, in the Rue Louis Thuillier, is intended to train masters, for giving workshop instruction in training colleges and higher primary schools. (Decree of Jan. 1, 1884.)

The course of instruction consists of the putting into practice of the various sciences studied at the training college, or at the higher primary school, or at the professional school: 1st, geometry, mechanics, physics, chemistry, natural history; 2nd, geometrical drawing, modelling, moulding, sculpture on wood and soft stone, working on wood on the bench, on metals at the forge, in the wax and stereotomy; 3rd, various exercises, military marches and movements topographic exercises, fire engine drill, singing, gymnastics.

There is an entrance examination, to which are admitted all candidates who are not less than 21 years, not more than 35 years old, and are provided with the higher certificate of capacity for primary instruction, or of the degree of Bachelor of Science. The examination includes geometrical drawing, ornamental drawing, an essay on a question of physical science, an essay on a question of natural history, interrogations at the black board on any of the scientific subjects of the syllabus of training colleges of primary instruction. Candidates may be (at their own request) examined in writing, in descriptive geometry, trigonometry, and algebra; or (*vivâ voce*) in science subjects not included in the syllabus.

The course lasts one year, at the end of which the students may come forward to be examined for the certificate of aptitude for workshop instruction.

This examination is open to the students of the college in the Rue Louis Thuillier, and to all candidates who are no less than 20 years old, and are provided with the higher certificate of primary instruction, or of the degree of Bachelor of Arts, or Bachelor of Science, or Bachelor of the *Enseignement Secondaire Spécial.* (Minute of July 20, 1883). There is a preliminary and a final examination.

The preliminary includes (for male candidates), 1st, a composition in geometry; 2nd, geometrical drawing: sketch (with size of parts) of an object in relief, and neat copy of same, on a specified scale; 3rd, a drawing relating to descriptive geometry; 4th, ornamental drawing from a cast, and modelling from simple model.

(*For female candidates*): 1st, an essay on hygiene or domestic economy; 2nd, a lecture on common things, delivered to pupils of a primary or maternal school, after an hour's preparation in a closed room; 3rd, ornamental drawing applied to women's work.

The Final Examination (men) includes: 1st, a manipulation of physics or chemistry or of Natural History, at the option of the candidate; 2nd, the execution of a piece of work in iron or wood, according to a sketch with size of parts given; 3rd, the examination of work done by pupils (drawings, work done in the workshop); 4th, *vivâ voce* interrogations bearing on the materials put at the disposal of the candidate. *

(Women): 1st, a very simple manipulation of physics or chemistry or preparation of Natural History, at the option of the candidate; 2nd, household work or needle-work (sewing, knitting, crochet, embroidery, cutting and sewing of clothes). Candidates may, at their own request, be examined in: 1st, caligraphy or handwriting; 2nd, freehand drawing from a bust or relief; 3rd, gymnastics, fencing and military exercises; 4th, topography, land-surveying, levelling, and gauging of streams; 5th, agriculture and horticulture; 6th, execution of manual work in a trade, the choice of which is left to the candidate.

Instruction in agriculture, rendered compulsory by the law of the 16th June, 1879, is entrusted to the departmental professors nominated after a competitive examination by a decree jointly agreed upon by the two Ministers of Agriculture and Public Instruction. A very complete programme, containing the most precise directions on the progress and the divisions of a course of agriculture, has been prepared by the Ministry in execution of the 15th article of the Decree of June 9th, 1880. The teacher, says the report, must inspire a taste for the country in the minds of children by interesting them in natural phenomena, and by introducing them to a knowledge of the life of plants and animals, by developing in them those natural tendencies which would lead them to take an interest in flowers, birds, insects, &c. The lessons on agriculture will also necessarily embrace visits to be made by the pupils under the direction of their teachers to those farms in the district which are best conducted, and also practical exercises, which will follow the lessons given in theory.†

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* For technical and elementary artistic education in France, see the First and Second Report of H. M. Commissioners on Technical Education, 1882. A pamphlet; 1884. 2 vols.

† For Agricultural education in France, see M. Jenkins's Report in the Second Report of the Royal Commissioners on Technical Instruction, vol. ii. (Spottiswoode, 1884), p. 97, *sqq.*; also Official Explanation of the Laws relating to the Organisation and Management of Farm Schools in France, *ibid.* p. 336, *sqq.*; Law relative to the Departmental Professors of Agriculture in France, *ibid.* p. 339; Decree relative to the Departmental Professors of Agriculture in France, *ibid.* p. 340; Letter of Instruction to the Departmental Professors of Agriculture in France, *ibid.* p. 343; General Scheme for a course of Lectures on Agriculture and Horticulture in French Normal Schools for Teachers, p. 346. See also Appendices XI. and XII. in Mr. Jenkins's report; Programme of the Elementary Instruction in Agriculture of boys in the Rouen district; ditto for girls. For the Evening Schools available for artizans, see Report, p. 29. On the Conservatoire National des Arts et Métiers; Public Free Lectures in France, see p. 31; Evening Instruction in the Provinces, *ibid.*; Evening Classes under Industrial Society of Reims, p. 32; Evening Classes in Lyons, *ibid.*; Evening Commercial Instruction in Paris, p. 33; Evening Art Classes in France, p. 34; École Nationale des Arts Décoratifs, Paris, *ibid.* p. 33; Municipal Art School, Paris, p. 35; Municipal Art Classes, *ibid.*; École des Beaux Arts of Lyons and Toulouse, *ibid.* p. 36–37; École Nationale d'Art Décoratif of Limoges, *ibid.* p. 38; Apprenticeship Schools of Boulevard de la Villette, Paris, *ibid.* p. 49, and 1st Report of 1882, p. 17–20; Le Havre Apprenticeship School, Report 1884, p. 49, and 1st Report 1882; The Watchmaker's School of Paris, Faubourg du Temple, report, 1884, p. 49. See also Higher Elementary Technical Schools in France, Report, *ibid.* p. 70; École de la Martinière at Lyons, p. 70, for girls, p. 74; École Professionnelle Municipale de Reims, p. 75; Primaire Supérieure d'Amiens, p. 80.

GROUP IV.—THE SCHOOL.

Exhibition of Plans, Diagrams, and Books bearing on School Architecture, School Hygiene and Physical Training organised under the auspices of the French Education Department.

Class XXXIV.

(West Central Galleries).

Designs and Models of Improved Buildings for Elementary Schools, Infant Schools, and Crèches, &c.

EDUCATION AND FINE ARTS DEPARTMENT. (Ministère de l'Instruction Publique et des Beaux-Arts. Committee on School Buildings.) —(1) Specimen of Schools built since 1880. 6 plans. (A) Types of Infant Schools. (B) Types of mixed Schools in rural districts. (C) Schools with a single class-room. (D) Schools with two class-rooms. (E) Schools with three or four classes. (F) Higher Primary and Technical School, course of instruction comprising three years. (2) Regulations. Minute du 17 Juin, 1880, as to the construction and fitting up of schools. Special circular of 28 July, 1882, for the construction of elementary schools, adopted by the School Building Committee. (I.) General Conditions. II. Caretaker's apartments. III. Cupboards, passages, staircases. IV. Class Rooms. V. Drawing Class Room; Workshop. VI. Covered shed and appurtenances for gymnasium. VII. Playground, Garden. VIII. Privies, Urinals, Cesspools. IX. Apartments for Master and his assistants. Résumé of instructions relative to the building of schools. Special circular of 28th July, 1882, as to the construction of infant schools. (3) Selection of Plans, and Details of Plans, and Photographs of school buildings private and public, 1 screen and 1 portfolio.

EDUCATION AND FINE ARTS DEPARTMENT (FINE ARTS SECTION).—(I.) Plans of the National School of Industrial Arts at Roubaix; Architect, M. Dutert. (II.) Plans of the National School of Decorative Arts at Limoges (Haute-Vienne); Architect, M. Jourdain. This school was established by the Municipality for Instruction in Art bearing on the ceramic manufactures for which Limoges has long been famous, and has been recently placed upon an entirely new footing by the decree dated November 5, 1881. It will henceforth be called L'École Nationale des Arts décoratifs de Limoges. M. Louvrier de Lajolais, the Director of the École Nationale des Arts décoratifs is also the director of this school.

1. **VILLE DE PARIS.**—(Plans of the Training College of Auteuil; the Higher primary school Arago; the boy's primary school, Avenue Duquesne; infant school Rue Jourdain; elementary school for boys and girls, Rue Blanche; and temporary schools erected to insure the execution of the new law making attendance at school compulsory. See *Catalogue de l'Exposition spéciale de la Ville de Paris.*)

2. **SOCIÉTÉ DES CRÈCHES (Président, M. MARBEAU, 27 Rue de Londres, Paris.)** — Reduced Model of a *crèche* (one tenth of its real size). 2 Plans of Crèches. Photograph of the Crèche des Ternes, Paris. Publications relative to Crèches by F. Marbeau. "Bulletin des Crèches," 1876–1884. See also Classes 40 and 55.

3. **SOCIÉTÉ DES ÉCOLES ENFANTINES. Association for the propagation of New Methods of Teaching in Primary and Infant Schools. Secretariat, 175 Rue St. Honoré, Paris.**—(1) Plan of a Model Infant School for 50 children. (2) Plan of a Model Infant School for 100 children. (3) Model of an Infant School. *See Cl. 47 in The Central Technical Institute (French Section of Education), 1st Floor.*

4. **INSPECTION DÉPARTEMENTALE DU NORD. (M. BRUNEL, Inspecteur, Directeur de l'Enseignement Primaire du Nord, at Lille.)**—Several Plans of Elementary Schools of the Département du Nord. (*See also Classes* 48, 49, 50). (1) Commune of Mons-en-Barœul. Two plans of boys' school with teacher's apartments and town hall. M. A. Mahieu, architect. (2) Town of Roubaix. 6 plans of the Institut Turgot, public higher primary and technical school for boys. (M. Richez, architect.)

5. **INSPECTION DÉPARTEMENTALE DU PAS-DE-CALAIS.**—Plans of Schools. (1) School for Boys of Marck (Département du Pas-de-Calais). (2) School for Boys, of Mametz (Département du Pas-de-Calais). (3) School for Boys, of St. Martin-au-Laert.

6. **DÉPARTEMENT DE LA GIRONDE.**—(1) Plans of the Training College (École Normale d'Institutrices) of Gironde. M. Valleton, architect. (2) Plans of School-houses of five rural districts of the Département of Gironde.

7. **VILLE DE BORDEAUX.**—Plans of several Schools of the town of Bordeaux.

8. **DÉPARTEMENT DU LOT ET GARONNE.**—Five Plans of Elementary Schools of the Département du Lot et Garonne.

9. **VILLE DE FLERS (DÉPARTEMENT DE L'ORNE).**—Copies of School Plans; architect, M. Hédin. (1) Elementary School, with 8 class-rooms (boys). (2) Groupe scolaire of Flers (primary school for girls, with infant school).

10. **VILLE DE ROUEN (Mayor, M. RICARD.)**—Plans of Schools. Architect, M. Jules Touzet. (1) Higher Primary and Professional School for 320 pupils (7 plans). (2) Private School for Girls (école libre de filles). (3) Infant School (école maternelle). (4) School for Girls with Infant School (école enfantine).

11. **M. MACHUEL, Inspecteur d'Académie in residence at Tunis.**—(1) Plan of the Tunis primary school for boys. (2) Views of the school.—Photographs of school children. (*See also Class* 48.)

12. **CERNESSON, LÉOPOLD CAMILLE, Architect, late President of the Municipal Council of Paris, 23 rue Michel-Ange, Paris.**—Plan of the Higher Primary School of Montbard, Côte d'Or. (*See also Class* 52.)

13. **BOUVARD, J., Architect of the City of Paris, 55 rue de Verneuil, Paris.**—Plans of the National higher primary school of Voiron (Isère). (1) General plan—ground floor—First floor, front. (2) Ground floor of the primary and infant schools. (3) First floor of the same. (4) Higher primary school, elevations, plan of ground floor. (5) First floor of the same school. (6) Outside buildings, kitchens, refectories.*

14. **CITY OF HAVRE; Mayor, M. Sigfried; Chief Architect, M. L. David.**—(1) Detailed Plans of the Technical School (École d'Apprentissage) of Hâvre. (2) Photographs of the École des Beaux-arts of Havre. (3) Type of an isolated school desk and seat as used in the Hâvre municipal schools. (*See also Class* 57. *Central Technical Institute.*)

15. **M. LIVET, 4 rue Ste. Marie, Nantes (Loire-Inférieure).**—(1) Plan of the Institute Livet, founded 1846, Technical and Apprenticeship School. (2) Plans of Workshops for the scholars; documents, &c. (*See Class* 53 *in Central Technical Institute, 1st Floor, Room No.* 48.)

16. **DÉPARTEMENT DU CALVADOS.**—Plans of the Training College for male teachers (École Normale d'Instituteurs) of Caen. Architect M. A. Nicolas.

17. **DÉPARTEMENT DES BASSES ALPES.**—Drawings and Plans of the Training College for female teachers at Digne (Basses-Alpes). Architect M.

17*a*. **DÉPARTEMENT DE L'AISNE, Training College of Laon.** — Three plans.

18. **DÉPARTEMENT DU LOIR ET CHER.**—Plans of the schools of Bourgeau, near Romorantin and of the hamlet school of Berveuse, near Maray. Architect, M. Chauvallon. (*See Ministère de l'Inst. Publ.* 2. *Portfolio.*)

19. **DÉPARTEMENT DES DEUX-SÈVRES.**—3 Plans. Types of hamlet schools.

19*a* **VILLE D'ALENCON.**—Municipal school of drawing for night classes; plan of the drawing class-room (*portfolio*).

20. **MASSON (Architect), AVENUE PARMENTIER, PARIS.**—Project for a group of school buildings for the Commune of Bondy, Seine.

21. **SOCIÉTÉ NOUVELLE DE CONSTRUCTION (SYSTÈME TOLLET), 61 Rue Caumartin, Paris.**—Designs and Plans for schools on this system. (*See also Group IIIa.*)

22. **SOCIÉTÉ DES ATELIERS DE NEUILLY (O. ANDRÉ, Directeur), Rue Charles Lafitte, Neuilly-sur-Seine.**—Scholastic Furniture and Plan of a Portable School (*See also Group III.*)

23. **FONDATION BISCHOFFSHEIM Professional School for Girls of the Jewish persuasion, 13 Boulevard Bourdon, Paris.**—Plans of the School. (*See Class* 49 *in the Central Technical College, 1st Floor, Room No.* 9.)

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* This establishment, in course of construction, will accommodate 750 children, viz.: 200 in the infant schools, 250 in the primary, and 300 in the higher primary school, out of which 160 will be boarders and 40 half-boarders. Special halls are destined for the teaching of gymnastics, drawing, casting, modelling, workshop work, &c. There will be also gardens for experimental work. Anticipated expenses for the construction 1,555,000 fr., out of which the State will contribute more than 1,000,000 fr.

Class XXXV.

(West Central Gallery.)

Apparatus and Fittings for warming, ventilating, and Lighting Schools, School Latrines, Closets, &c.

FRENCH EDUCATION DEPARTMENT.—(1) Specimens of appliances and apparatus for the Lighting, Warming, Ventilating of primary schools. (*See Specimens of Schools erected since* 1880, *Cl.* 34, *and also Documents, Cl.* 40.) (2) Specimens of fittings and arrangements for the Lighting, Warming, Ventilating of secondary grade schools (Lycées et Colléges). (*See plans of new Lycées et Colléges by de Baudot, Lecœur, Vaudremer, Proust.*)

24. **TRELAT, ÉMILE, Director of the Special School for Architecture, Boulevard Mont Parnasse, Paris.**—School lighting (Éclairage scolaire). Two plans, showing how class-rooms ought to be illuminated, heated, ventilated, &c., so as to avoid the injurious effects of direct sunlight and heated air.

25. **DE BAUDOT, Architect, 3 Place de Rennes, Paris.**—Plans of the Lycée Lakanal à Sceaux, near Paris (Seine). 7 Panels. This lycée (National School for secondary instruction, constructed for 700 boarders, 50 day boarders, and 100 day scholars) is constructed on a space of 9 hectares. The buildings are surrounded by a park; the disposition of the buildings is such that the play courts are sheltered against the west and north winds; they are open to the east, and look on to the park. The refectories or dining-halls are near the kitchens, which are isolated from the rest of the buildings. The establishment is warmed by steam. "The system of warming is combined with that of the ventilation necessary in the class-rooms, studies, and dormitories. For this purpose vertical openings are placed in the wall and united with the horizontal shafts placed at the bottom of the rafters, and placed in communication with the ventilating lanterns on the roofs." (Note by the Architect.) The Sanatorium is turned towards the east in a completely isolated building. A special building for contagious diseases is connected with it by an open gallery. The school gymnasium and covered courts (préaux) face the park. Great care has been given to the hygienic arrangement of the lavatories and closets. They are supplied with a great abundance of water and by means of réservoirs *de chasse* and other dispositions marked on the plans the diluted matters are speedily carried away through a special drain which reaches the river Bièvre at the point where it meets the main drain (égout collecteur) of the left bank of the Seine.

26. **LECŒUR, Architect, 128 Rue de Grenelle, Paris.**—(1) Type of a Secondary School in a country town. Plans of the Lycée of Bayonne. Bird's-eye view of the buildings, courts, and gardens. (2) Types of Secondary School in the most populated part of the metropolis. (A) Plans of the Petit Lycée Condorcet, corner of the Rues d'Amsterdam and de Hambourg at Paris. This lycée, an annex to the largest Paris public school (Lycée Condorcet), situated between the place du Hâvre and the Rue Caumartin, is specially devoted to the junior boys. Number of scholars 766, of which 230 are day boarders and 536 day scholars (externes). Terms for the year: Grammar division, day boarders, 850 francs; day scholars, 250 francs. Lower division, day boarders 700 francs; day scholars, 180 francs. Warming, by steam at low pressure (system Geneste and Herscher). Methodical circulation of steam, heating surfaces direct into the room, the said surfaces placed at the foot of the cold air chamber, emission of pure air moderately hot, evacuation of foul air by opening into the collecting shafts. Direct ventilation all through the year. (B) Plans of the Petit Lycée Louis-le-Grand, in course of erection opposite to the Jardin du Luxembourg, Paris, inaugurated in October, 1883. (C) Lycée de Montluçon (Allier), area 20,000 square metres. The play grounds are open to the south. Underground drains carry all pluvial and other waters to the Cher. Special Taps placed in the drains facilitate their frequent cleansing. Warming by ceramic calorifères with heated air, system Geneste et Herscher. Actual number of pupils 309; boarders 98. (D) Project of a Normal School with detached boarding houses, Tutorial system.

27. **VAUDREMER, Architect, 110 Rue de Grenelle, Paris.**—(1) Plans of the Lycée at Ajaccio (Corse). (2) Plans of the Lycée de l'Avenue Duquesne à Paris. (3) Plans of the Lycée de Grenoble (Isère)

28. **PROUST, Architect, Paris.**—Photographs and Plans of the Collége Communal at Fontainebleau.—(1) Front Elevation (Photograph). (2) Ground Floor. (3) First Floor.

29. **LAMBERT, MARCEL, Architect, 8 Rue du Havre, Paris.**—Plans of a College d'Enseignement Secondaire Spécial, for day scholars only.

30. **GENESTE ET HERSCHER, Engineers, 42 Rue du Chemin-Vert, Paris.**—(1) Models and Plans. (2) Album of Plans and Drawings of Apparatus and Appliances for the warming and ventilating of schools and various public establishments of education. (*See also Groups I., III., V.*)

For Classes xxxv., xxxvi., and xxxvii. See also Ville de Paris, special catalogue.

31. **ESPERON-MORIN, fumiste, Rue du Pont, à Issoire (Puy-de-Dôme).** Specimen of a Ventilating Calorifère (Stove) for class-rooms and public establishments of instruction. This stove has been constructed in conformity with the rules issued by the French Education Department. The pure air passes into a double enclosure, whence it acquires a high temperature, then it escapes by the upper portion of the apparatus, after having been saturated with steam. Price of the model No. 3 for warming 300 cubic meters, 180 francs.

32. **GUÉRIN, 34 Rue Laugier, Paris.**—Models of hygienic parquets and moveable floors for schools. (*See also Group III.*)

33. **MONTHIERS, Civil Engineer à La Croix en Brie (Seine-et-Marne).**—Wood plinths and appliances for heating and ventilating schools. (*See also Group III.*)

Class XXXVIII.

(*West Central Gallery.*)

Precaution in Schools for preventing the spread of Infectious Diseases, School Sanitoria, Infirmaries, &c.

34. **DR. GIBERT, 4 Rue Séry, Le Havre (Seine-Inférieure).**—Model of a Dispensary for Children.

35. **M. CHAIX, Printer and Publisher, 20 rue Bergère, Paris.**—Plans of a professional school annexed to the printing establishment of M. Chaix.—Hygienic arrangements for protecting and improving the health of the apprentices and scholars of the preparatory school. See notice by the apprentices of M. Chaix's School, printed in French and English. The Technical School, founded in 1862, by M. Napoléon Chaix, comprises three distinct groups: 1. The apprentice compositors; 2. The apprentice engravers and lithographers; 3. The boys and youths occupied at the machines. Every apprentice receives per day, a gratuity varying from 50 centimes to 3 fr. 50 c. according to age. The direction of work is entrusted to three chief foremen, the school teaching is given by 13 of the principal people connected with the firm. Apprentices have the free use of an extensive library. Means of encouragement and emulation: 1. Counters (jetons de présence) of the value of 10 centimes (one penny) are given every day to the pupils whose behaviour and work during the lesson have been satisfactory. The sum represented by the counters which have been given out since the origin of the courses amounts to 9900 francs; 2. List of honour; 3. Annual distribution of prizes; 4. Frequent gifts of instructive and moral books. Among the measures taken for the health of the boys, there is one which we would specially call attention to: it is the monthly hygienic inspection. On the first Monday of the month the apprentices meet to be examined by the doctor of the firm, who examines their general state of health, and orders, for those that need them, tonic and strengthening medicines. More than one hundred flasks of codliver-oil, syrup of gentian, antiscorbutic syrup and quinine wine, are every year supplied to the boys. Bath-tickets are also delivered to those that ask for them; the distribution amounts, on the average, to twenty tickets per month in winter, and to thirty-five in summer. The monthly hygienic inspection which gives an opportunity to the doctor for renewing his useful counsels about hygiene and cleanliness, was instituted in 1873; it has produced excellent results, and a sensible improvement is reported in the health of the boys.

Class XXXIX.

(*West Central Gallery.*)

Special Apparatus for Physical Training in Schools, Gymnasia, Apparatus for Exercise, Drill, &c.

FRENCH EDUCATION DEPARTMENT (Ministère de l'Instruction publique et des Beaux-Arts.)—(1) Law of January 27, 1880, declaring the teaching of gymnastics obligatory in the establishments of public instruction. (2) Specimen of apparatus and gymnastic appliances conceded to the Training Colleges and primary schools by the French Education Department. The appliances are provided by Messrs. Frété and Co., Corderie Centrale, 12 Boulevard Sébastopol, Paris. (3) Photographs of school gymnasia and groups of children learning drill and gymnastics. (4) Handbooks for teaching gymnastics and drill.

VILLE DE PARIS, Plans of the Gymnase Voltaire, Rue Japy.—This building, begun in 1883, will soon be opened. It comprises a basement, ground-floor, and offices on the first floor. The basement is occupied by two cellars and two heating appliances. On the ground-floor is the cloak-room, the inspector's office, an assembly hall, water-closets for both sexes, two magazines or depôts for gymnastic apparatus, a room for the hot-water baths, a space reserved for gymnastic exercises, and a stall for distributing prizes to pupils in communal schools. Four steps conduct to the first floor. The total area is 1654 mètres. The cost amounts to 200,000 francs, to which must be added 380,000 francs for the ground and 300,000 francs for building.—(*Extract from the Catalogue de l'Exposition Spéciale de la Ville de Paris.*)

36. **REIBER (ÉMILE) Architect, 54 Rue Vavin, Paris.**—Decorative panel, "La Géométrie en action," gymnastic bars and hoops.

37. **N. LAISNÉ, Inspecteur de l'enseignement de la Gymnastique dans les Écoles Communales de la Ville de Paris, 264 Rue St. Jacques, Paris.**—Works on physical education. (*See Class* 40.)

37*a*. **GOUPIL ET CIE.; BOUSSOD ET CIE. SUCCESSORS, 9 Rue Chaptal, Paris.**—*La Jeune Garde*, photo-gravure of a picture by E. Frère.

37*b*. **MESSRS. FRÉTÉ ET CIE., Corderie Centrale, 12 Boulevard Sébastopol, Paris, Fournisseurs du Ministère de l'Instruction Publique.**—(1) Specimens of appliances for teaching gymnastics in schools of primary and secondary grade. (2) Games connected with the teaching of gymnastics. (3) Appliances for teaching fencing, masks, gloves, foils, plastrons, &c., as supplied to several national and municipal *lycées* and *colléges*. (*See also East Central Gallery.*)

37*c*. **CARUE, 269 Rue St. Denis (Paris).** Apparatus and specimens of appliances for teaching gymnastics in schools.

39. **CERCLE PARISIEN DE LA LIGUE DE L'ENSEIGNEMENT, (Président, M. EMMANUEL VAUCHEZ, 175 Rue St. Honoré, Paris.)**—Specimen of gymnastic apparatus and rifle with which many schools have been provided at the expense of the Ligue de l'Enseignement. (*See also Class* 55 *in the Central Technical Institution, Room No.* 8.)

40. **UNION FRANÇAISE DE LA JEUNESSE, 157 Boulevard St. Germain, Paris.**—Album of photographs relative to the teaching of gymnastics in schools.

41. **COLLÉGE SAINTE-BARBE, Place du Panthéon, Paris (Director, M. DUBIEF).**—Photographs and Plans of the School, Class-rooms and Gymnasium, &c.

42. **ÉCOLE MONGE, 145 Boulevard Malesherbes, Paris, (Director, M. GODART).**—Photographs of the school, class-rooms, play-yards, gymnasium, dormitories refectories, etc. Groups of pupils and documents.

43. **ÉCOLE ALSACIENNE, 128 Rue d'Assas, Paris (Head-master, M. RIEDER, Agrégé de l'Université.)**—(1) Plan of the Gymnasium. (2) Plan of the School. (3) Documents relative to the School. (4) Album of Photographs.

44. **SOCIÉTÉ PATERNELLE ET COLONIE AGRICOLE DE METTRAY, near Tours, Indre et Loire.**—Album of the School, Plans, Photographs of groups of Inmates in the Class-room, at field-work, in the gymnasium, at drill, etc.

46. **PETIT, ET DUMOUTIER, 71 Rue Charlot, Paris.**—Special Apparatus for teaching swimming in Schools. (A reduced model.)

Class XL.

(*West Central Gallery.*)

Literature, Statistics, Diagrams, &c., relating to Group 4.

FRENCH EDUCATION DEPARTMENT (Ministère de l'Instruction publique et des Beaux-Arts).—Regulations relative to the Construction of Schools. Various documents, bearing on school buildings and school furniture. Collection of Documents relating to (*a*) The Hygienic Arrangements in Schools, (*b*) the Medical Inspections, (*c*) Physical Training of Children in and out of School. (*See also Class* 55, *Central Technical College, Room* 9; 1*st Floor.*) Douliot (Caravanes scolaires); Poulain, *L'éducation physique*, (essay on) and H. Sabatier-Plantier, Société pour la propagation des Fêtes d'enfants.

47. **VILLE DE PARIS.**—Plans and Models of Schools. (*See Catalogue Spécial de la Ville de Paris.*)

48. **CERCLE DE LA LIBRAIRIE, de l'imprimerie, et de la papeterie, 117 Boulevard St. Germain, Paris (M. PLON, President).**—Collective Exhibition: Books, Plans, Diagrams on School Architecture; School Hygiene and Physical Training of Children. (*See Class* 48, *the list of the adherents to the collectivity. The principal exhibits are in the Technical Institute* 1*st Floor, Room* 9.)

Des Fossez & Cie. (ancienne maison Morel), Rue Bonaparte, Paris.—Designs and Plans of School Architecture. (1) Architecture Communale, a portfolio of eighteen plates (of plans, sections, and elevations of schools). (2) Encyclopédie d'Architecture, a portfolio of forty-

two plates relating to lycées, schools, &c. (3) Architecture Scolaire, a portfolio of seventy-two plates and explanatory text (hamlet schools, boys' schools, girls' schools, scholar groups, infant schools, technical schools, training colleges of primary instruction). (4) Paris: Monuments erected by the city from 1850 to 1880. An extract showing the buildings devoted to public instruction.

Ducher et Cie. Publishers, 51 Rue des Écoles, Paris.—Works on School Architecture. (1) Infant and other Schools. (2) Designs for same, awarded a prize at the Trocadéro Exhibition. (3) Various Plans and Drawings of School Architecture.

49. **SOCIÉTÉ PROTECTRICE DE L'ENFANCE,** 4 Rue des Beaux-Arts. Director, Dr. Marjolin. Documents and notice on the works of this society; statistics.

50. **MATERNAL CHARITY SOCIETY,** 3 Rue Méchin, Paris.—Secretaries: Mme. Raimbert and M. F Gille. Notes and documents on the Society.

51. **NARJOUX, FÉLIX, Architect, 3 rue Littré, Paris.**—Works on School Architecture. (1) Écoles publiques en France et en Angleterre, 1 vol. 8°. (2) Écoles publiques en Belgique et en Hollande, 1 vol. 8°. (3) Écoles publiques en Suisse, 1 vol. 8°. (4) Écoles normales primaires en Europe, 1 vol. 8°. (5) Écoles normales et Salles d'Asile, 1 vol. 18°. (6) Construction et installation des écoles primaires, 1 vol. 8°. (7) Réglement pour la construction et l'ameublement des maisons d'école, 8°. (8) Écoles publiques en Europe, 1 vol. 18°. (9) Architecture scolaire écoles de hameaux, 1 vol. 4°. (10) Paris, édifices consacrés a l'instruction publique, 1 vol. fol.

52. **DR. LAYET, Professeur d'Hygiène à la Faculté de Médecine, 42 Rue du Palais de Justice, Bordeaux.**—Report for the inspection of Communal Schools at Bordeaux.

53. **BEAUMONT, TRIGANT DE (au Ministère de l'Intérieur, Paris).**—Essays on Crèches and the Protection of Infant Life.

54. **Dr. C. DELVAILLE, ancien adjoint au Maire de Bayonne.**—Documents on School Hygiene—(1) Réglement et organisation de la Commission Municipale d Hygiène et de Statistique de Bayonne. (2) Feuilles mensuelles constatant l'État Hygiènique de chaque classe. (3) Rapport des Travaux de la Commission d'Hygiène pour 1883, par le Dr. Delvaille. (4) L'Inspection médicale des Écoles, par le Dr. Delvaille.

55. **Dr. A. RIANT, Chief Physician of the École Normale de la Seine.**—Works on Hygiene—(1) L'Hygiène et l'Education dans les internats, lycées, colléges, pensions, et maisons d'éducation. Paris: *Hachette.* (2) L'Hygiène Scolaire. (3) Leçons d'Hygiène.

56. **DR. ELIE PÉCAUT.**—Cours d'Hygiène Scolaire. 1 vol. Hachette et Cie., 1884, Paris.

57. **N. LAISNÉ, Inspecteur de l'Enseignement de la Gymnastique dans les Écoles Communales de Paris, 264 Rue St. Jacques, Paris.**—Works on Physical Education.

58. **ÉCOLE SPÉCIALE D'ARCHITECTURE, Boulevard Montparnasse, Paris. ÉMILE TRELAT, Director.**—(1) Album of Models of constructions for hospitals. (2) Programme of a series of Lectures on Hygiene delivered at the École Spéciale d'Architecture.

59. **BOURDEILLETTE (Architect), Rue Bourdille, Périgueux.**—Memoir on School Architecture (MSS.)

CENTRAL INSTITUTION OF THE CITY AND GUILDS OF LONDON.

(*Rooms* 7, 8, 9 *and Corridor.*)

DIVISION II.—EDUCATION.

Class XLVII.

Crèches and Infant Schools.—(*a*) Apparatus and Fittings for Crèches and Infant Schools; (*b*) Games, Toys, and Kindergarten Amusements; (*c*) Models and Appliances for Teaching; (*d*) Examples of School Work.

MINISTRY OF PUBLIC INSTRUCTION AND FINE ARTS, Paris.—(1) Regulations for the organization of normal training for governesses in maternal schools. (2) Documents relative to the organization of maternal schools. Decree of Aug. 2, 1881; and minute of July 28, 1882. Plans. (*See also Classes* 35 *&* 55.)

1. **CERCLE DE LA LIBRAIRIE.**—(1) Collective Exhibit of Books, &c. (2) Samples of Didactic Appliances for Maternal Schools. (*See Class* 48 *for List of Members.*)

2. **INFANTS' SCHOOLS SOCIETY.**—(*Société des Écoles Enfantines*, founded 1871, formerly called Société Froebel; association for the propagation of the new methods of training in infant schools; Offices—175, Rue St. Honoré, Paris). Plans, model of infant school, specimens of the occupations and amusements of children in the *Écoles Enfantines.*

3. **MONTERNAULT, MADAME A.**—French Intuitive Method. (*Hachette.*)

4. **BELLIER, Mme., 16 Rue Cabirol, Bordeaux.**—'Le Moniteur du Jeune Age,' numbers for 4 years.—Prizes for infants' schools: Bonspoints du Jeune Age.

5. **INSPECTION ACADÉMIQUE DE LA GIRONDE.**—(1) Specimen of the occupations and works of the children of the infant schools at Bordeaux. (2) Treatise on the site of Infant Schools, par Mme. l'inspectrice des Écoles Maternelles.

5*a*. **INSPECTION ACADÉMIQUE DU DÉPARTEMENT DU NORD.**—Specimens of the work done in the infant schools.

6. **LIETOUT, Mme., 13 Rue de Poissy, Paris.**—(1) Instructive games for children; Compendium for Maternal Schools. (2) Musical Diagram, teaching simultaneously reading, writing, and singing. (3) Disc, showing the formation of compound colours. (4) The education of the senses.

7. **RACT et FALQUET, 16 Rue Cassette, Paris.**—(1) Map of France, for Maternal Schools, by Mdlle. Veyrières. (2) Globe for similar Schools. (3) Durand's 'Législation des Écoles Maternelles.' (4) 'L'École Maternelle,' periodical. (5) Table and bench for infant schools.

8. **GARCET et NISIUS, 76 Rue de Rennes, Paris.**—(1) Froebel's Counter and other objects for Kindergarten. (2) Plan of a Village Infant School. (3) Object Lessons for Infant Schools. A Calendar by Inspector-General Cadet, reproduced from the *Dictionnaire de Pédagogie.* (4) Apparatus for hanging maps. (*See also Gallery of Royal Albert Hall.*)

9. **ANDRÉ, O., 54 bis Avenue de Neuilly, Paris.**—Various Objects of School Furniture, designed specially for minimizing the size of the support of school tables and benches, so as to facilitate the better sweeping and cleaning of school-rooms. Models of school furniture adopted by the Training College of Auteuil, the Schools of St. Denis, the College Ste. Barbe, &c. (*See Western Central Gallery.*)

10. **D'HENRIET, 28 Rue Chabrol, Paris.**—Collection of Easy Models for teaching drawing to young children.

11. **MLLE. LAURE COLLIN.**—Manuel d'enseignement de la méthode chorale enfantine for infant schools.

For the Ville de Paris Schools, scholastic furniture and pupil's work, see Western Central Gallery and Special Catalogue.

Class XLVIII.

Primary Schools.—(*a*) Apparatus and Fittings; (*b*) Models and Appliances for Teaching, Text-books, Diagrams and Examples; (*c*) Specimens of Work in Elementary Schools.

MINISTRY OF PUBLIC INSTRUCTION, Paris.—(1) Samples of the Collection of Books granted by the Department to Communes for the formation of Libraries of general

information in the elementary schools. (2) Papers relating to the same. (3) Specimens of school appliances (maps, diagrams, &c.) supplied by the firms of Hachette et Cie., Ch. Delagrave, Gautier, Ikelmer, Bertaux, Lanée, Challamel, Rothschild, Belin, Boyer, Duru, Masson, &c., and granted gratuitously to the primary schools and training colleges by the Education Department for the teaching of geography and the demonstration of the metrical system:

Hachette et Cie., 79 *Boulevard Saint-Germain, Paris.* This firm exhibits the following geographical works—Meissas (A. and G.): A new map of France (78·7 inches by 82·6 inches), giving the watercourses, mountains, administrative divisions, railway lines. Meissas: A new map of Europe (78·7 inches by 82·6 inches), similar in all respects to the above. Meissas: A map of the world (43·3 inches by 67 inches, giving only the principal divisions of the world. Cortambert (E.): A small map of France (35·4 inches by 47 4 inches). Cortambert (E.): A small map of Europe (same size), both intended for small schools in rural districts. Vivien de Saint-Martin: A globe of the earth (13 inches diameter). There are some globes of variable size and the prices vary accordingly.—School Museum by Dr. Saffray—School reward cards—(*a*) botanical, (*b*) geographical, (*c*) various trades—Level's *Compendium Métrique* —Material for infant schools.

(*Ch. Delagrave, Rue Soufflot, Paris.*)—Maps, drawn by Prof. Levasseur: (1) France Scolaire (scale $\frac{1}{600000}$), (2) Europe (scale $\frac{1}{4000000}$) (3) The World (scale $\frac{1}{23000000}$). All these represent the principal physical features, agricultural products, coal mines, metallurgical centres, chief railways, telegraphic and submarine cables, lines of navigation, and leading political and economical facts. A map of Europe (scale $\frac{1}{4000000}$) by Larochette, in chromo-lithography, (1·55 metres by 1·25 metres), remarkable for its clearness of details. A Globe of the Earth, by the same (1·20 metres or about 48 inches in circumference), showing at a glance the seas and rivers and mountains, as well as the lines of navigation and telegraphic and submarine cables.

(*Maison J. Gautier*, 55 *Quai des Grands Augustins Paris.*)—Wall Maps: map of France, map of Europe, and map of The World, drawn by A. Vuillemin. These maps, while containing all indispensable details, are remarkable for their clearness. The scale which has been adopted has made it possible to give greater importance to the representation of the mountains. A table of the weights and measures, by Henry des Vosges, sums in a convenient form the advantages of the metrical system.

(*Ikelmer*, 47, *Rue des Francs Bourgeois, Paris.*)—A Map of the World in Hemispheres, measuring 1 metre 85 by 95 centimetres (6·06 feet by 3·11 feet), and giving the results of the most recent discoveries, the great lines of navigation, the chief railways, the submarine cables, the telegraphic lines on land in Asia and Australia, the sea currents, and showing the political divisions, and the colonial possessions of the various states. A Globe of the Earth, one metre (39·37 inches) circumference, prepared by R. Barbot, giving the results of the recent discoveries of Livingstone, Stanley, Cameron, Dr. Nordenskjold, the telegraphic lines and cables, the great lines of navigation, the mountain systems, the sea currents, and showing the French colonial possessions.

(*E. Bertaux*, 25, *Rue Serpente, Paris.*)—A Globe of the Earth, by E. Dubail. This globe is 14·96 inches in diameter. The author, late professor of geography at the Military College of St. Cyr, has, by a judicious use of various tints, rendered perceptible the difference in level of valleys and table-lands. The globe represents also the sea currents and the great lines of navigation and of communication by land. The details concerning political geography have been reduced to what is strictly necessary, and in no way interfere with a proper understanding of the physical geography.

(*Lanée*, 8 *Rue de la Paix, Paris.*)—Three Wall-Maps (France, Europe, The World), on which all important details are made conspicuous by a judicious use of a few tints; also a table, giving the weights and measures of the French Metrical System.

(*Challemel aîné, Paris.*)—(1) A Map of the Colony of Senegal, or of the French Possessions on the West Coast of Africa. This Map, drawn by C. Mathieu, includes all the country situate between Lake Taniahié and Sierra Leone. It shows the various independent and protected states, the position of French, English and Portuguese forts, and all administrative divisions. (2) A map of the Province of Oran, by Ad. Langlois (scale $\frac{1}{800000}$) gives all the places, rivers and thalwegs, altitudes, administrative divisions, roads, railways, telegraphic lines, steamboat lines, lighthouses, cultivated portions, forests, mines, quarries, mineral springs, a plan of the city of Oran, a small map of the neighbourhood of Oran, and is accompanied by interesting statistics.

MINISTRY OF PUBLIC INSTRUCTION, Paris.—(3) Synoptic table showing the detailed organisation of primary studies, their objects, methods, and programmes. (4) Note pour servir à l'étude des programmes: Extracts from the *Instructions et directions pédagogiques*, par M. Gréard, vice-Rector of the Académie de Paris. (5) Specimen of diplomas (*certificate of Primary Studies*, &c.), and of merit awards and medals granted to teachers.

VILLE DE PARIS. (*See Western Central Gallery, and Special Catalogue, page* 173).

CERCLE DE LA LIBRAIRIE, DE L'IMPRIMERIE ET DE LA PAPETE-

RIE,* 117 Boulevard St. Germain, Paris.—Collective exhibition of educational and scholastic publications, documents and books on primary, secondary, higher, technical, and artistic education, school administration, and legislation prize-books, school rewards, &c., &c.

* The following firms are members :—

Alcan, Félix (Works on Science and Medicine).
Baillière, J. B., & fils do.
Baschet, L. (Artistic Publications).
Belin Veuve & fils (Scholastic Publications).
Bouasse Lebel (Images and Prints).
Cerf (Educational Works).
Charavay frères do.
Claeson (Technical Publications).
Colin (Armand) & Cie. (Scholastic Publications
Delahaye et Lecrosnier (Medical Publications).
Delagrave (Scholastic Publications).
Delalain frères do.
Des Fossez & Cie. (Architectural Publications)
Ducher & Cie. do.
Ducrocq (Educational Publications).
Dupont, Paul do.
Firmin, Didot & Cie. (Scholastic and Educational Publications).
Gedalge (Scholastic Publications).
Goupil & Cie. (Artistical Publications).
Hachette & Cie. (Scholastic and Educational Publications).
Hennuyer (Educational Works).
Hetzel & Cie. (Educational Publications).
Heugel (Musical Publications).
Jouvet & Cie. (Scholastic Publications).
Leduc, Alph. (Music).
Lemoine, Achille (do.).
Masson, Georges (Medical and Scientific Publications).
Plon Nourrit & Cie. (Educational Publications).
Poussielgue frères do.
Quantin (Artistic Library).
Roret (Collection of Books on Technical Education).
Suzanne (Geographical Material).

(N.B.– A detailed Catalogue of the Publications exhibited by the Cercle de la Librairie will be at the disposal of the Visitors in the Room No. 49, Central Technical Institute.)

PRINCIPAL DIVISIONS OF THE WORKS EXHIBITED BY THE CERCLE DE LA LIBRAIRIE AND PRINCIPAL AUTHORS IN EACH DIVISION.

I. *Reading and Writing.*—Works by Béhagnon, Belèze, Dupont, Flament, F. P. B., Néel, Pape-Carpentier, Regimbeau, Taiclet, Villemereuse, &c.

II. *Readers—Object Lessons.*—Works by Belèze, Paul Bert, Bonnier, Bonant, Bruno, Dupont, Gillet Damitte, Guyau, Maigne, Rocherolles, Saffray, &c.

III. *Moral Instruction and Civism.*—Works by Audley, Bruno, Lalvi, Liard, Mabilleau, Marion, Raymond, J. Simon.

IV. *French Language and Literature.*—Works by Belèze, Bénard, Brachet, Brouard et Berger, Carré et Moy, Croiset, Lallier et Petit de Julleville, Dezobry, Feugère, F. P. B., Frieh, Larive et Fleury, Leclair et Rouzé, Poitevin, Saint Germain, Subercaze, &c.

V. *History.*—Works by Belèze, Bénard, Bernard, Blanchet, Brouard, de Courval, Dézobry, Duruy, F. P. B., Gillet Damitte, Lavisse, Martin Henri, Pigeonneau, Figuier, Subercaze, Vincent.

VI. *Geography.*—Works by Bainier, Belèze, Brouard, Chevallier, Cortambert, Drioux, Dubail, Dubon et Lacroix, Foncin, F. P. B., Joanne, Lemonnier et Schrader, Levasseur, Pigeonneau, Reclus, Sanis, Vuillemin, &c.

VII. *Mathematical Sciences.*—Works by Amiot, Auvert, Belèze, Burat, F. P. B. Garcet, Hément, Leyssenne, Maire, Rebière, Tarnier, Vintéjoux, &c.

VIII. *Physical and Natural Sciences.*—Works by Belèze, Paul Bert, Bonnier, Bouant, Fernet, Gérardin, Gripon, Hément, Langlebert, Poiré, Privat Deschanel et Focillon, Regodt, Saffray, Saucerotte, Séguin, Zeller, &c.

IX. *Agriculture, Horticulture.*—Works by Barral, Barrau-Heuzé, Block, Hugot, Saucerotte, Ysabeau, &c.

X. *Modern Languages and Foreign Literatures.*—Works by Chasles, Cottler, Darmesteter, Elwall, Heumann, Leclair, Schmitt, Schwartz, Sevrette, de Suckau.

XI. *Pedagogy ; administration relative to Public Instruction.*—Works by Barrau, Brouard, Buisson, Cadet, Defodon, Delon, Girard, Gréard, Horner, Jost, Marion, Matrat, Narjoux, Pape-Carpentier, Paroz, Pichard, Rendu, Rousselot, Salmon, Subercaze, &c.

XII. *Common Law ; Legislation ; Political Economy ; Domestic Economy.* — Works by Bertillon, Blanqui, Block, Dupin, Gillet Damitte, Hippeau, Joly, Raymond, Wirth, &c.

XIII. *Linear Drawing ; Art and Ornamental Drawing ; History of Art.*—Works by Allongé, Armbruster, Bargue, Cernesson, Collin, Darchez, Garnier, d'Henriet, Le Béalle, Ménard, Pfnorr, Pillet, Ravaisson, Riester, Sauvageot, Tronquoy, Viollet-le.Duc.

XIV. *Music and Singing.* — Works by Arnoud, Baillot, Batiste, Bazin, Bizet, Czerny Danhauser, Duprez, Garcia, B. Godard, Laek, Lavignac, Leduc, Lemoine, Marmontel, Renaud de Vilbac, Rodolphe, &c.

XV. *Manual Work and Handicraft ; Technical Instruction ; Architecture.* — Works by Louis Figuier, Narjox, Scheffer, &c.

XVI. *Educational Works and Prize Books.*—Works by Biart, Charavay, Desbeaux, Dupuis, Giron, Habberton, Jacob, Laboulaye, Macé, Maign, Menard, Muller, de Parville, Pizzetta, Ratisbonne, Rozan, Simonin, Stahl, Verne, &c.

XVII. *Hygiene and Gymnastics.*—Works by Bouchardat, Cornil, Fonssagrives, Martin, Pape-Carpentier, Parrot Elie, Pécaut, Rambosson, Riant, Saffray, Vergnes, &c.

XVIII. *Various Publications.* — Works by du Temple, F. P. B., Jacquemin, Narjoux, Sauvageot, Violet-le-Duc, &c.

VARIOUS OTHER COLLECTIONS OF EDUCATIONAL WORKS EXHIBITED BY THE CERCLE DE LA LIBRAIRIE.

Bibliothèque des Écoles et des Familles, Bibliothèque des Merveilles, Bibliothèque des petits enfants, Bibliothèque rose (Hachette).—Bibliothèque lilas (Delagrave).—Bibliothèque de l'enseignement des beaux arts (Quantin).—Bibliothèque utile (Alcan).—Bibliothèque d'éducation moderne (Charavay frères).—Bibliothèque des mères de famille (Didot).—Bibliothèque d'éducation et de récréation (Hetzel).—Collection Roret.

Founded in 1847, the Cercle de la Librairie which has obtained the highest awards at the International Exhibitions of Vienna and Philadelphia, unites in one association the members of all the various callings connected with the publishing trade and the diffusion of thought and art. The Cercle is the proprietor of the Bibliographie de la France, a publication founded in 1871, for the registration of the titles of all volumes, pamphlets, engravings, prints, and musical publications edited in the country. Le Syndicat de la propriété littéraire (founded by M. G. Hachette), has also its abode at the Cercle de la Librairie. The successive presidents of the Cercle have been, up to the present time: MM. J. B. Baillière, président du Comité d'organisation, et A. Firmin Didot, membre de l'Institut; M.M. Pagnerre, Thunot, Langlois J. Delalain, Roulhac, L. Hachette, Bréton, Ch. Laboulaye, G. Masson, J. Basset, G. Hachette, E. Plon.

12. ACADEMIC INSPECTORATE OF GIRONDE (INSPECTION ACADÉMIQUE DE LA GIRONDE). — Work done by Students in Training Colleges and by Scholars of the Elementary Schools. — (1) Works of teachers in training at the Normal School of La Sauve. Exercise books, drawings, manual work, &c. (2) Similar works from the rue Picard Bordeaux. (*a*) Manual work in iron and wood. (*b*) Notice on the organization of the school workshops. (3) Pupils' works from the infant schools of Bordeaux (see above, Classe 47). (4) Plans of school-house of five rural parishes of the Department of Gironde (see Group 4, cl. 34). (5) Notice on the Boys' Higher Primary School of Bordeaux. (6) Report by Dr. Layet on the Health of Schools at Bordeaux (Bulletin départemental de l'Instruction primaire).

13. ACADEMIC INSPECTORATE (INSPECTION ACADÉMIQUE) OF THE DEPARTMENT OF PAS DE CALAIS. — (1) Work done in schools; exercise books from the schools of Contes, Boulogne-sur-Mer, Étaples, Saulty, Auchy-lès-Hesdin, Auzi-le-Château, Billy-Berclau, Croisilles, Hermies, Buire-le-Sec, Licques, Samer, Lumbres, Campagne-lès-Hesdin, Montreuil, St. Pierre-lès-Calais. (2) Plans of the Schools of Marck, Mametz, and St. Martin au Lacy. (See Groupe 4, cl. 34, *Western Central Gallery.*)

14. REGENCY OF TUNIS SCHOOLS INSPECTORATE (M. MACHUEL, Inspector).—Works of Scholars in the French and Arab schools at Tunis.

15. MARANS SCHOOL, Charente Inférieure.—15 Copy Books.

16. INSPECTION ACADÉMIQUE DU DEPARTMENT DU NORD, M. BRUNEL, Inspecteur, Director de l'Instruction Primaire du Nord.—(1) Plans of Schools. (2) Copy Books (Primary Schools). (3) Manual Work executed in schools: A. Boys —Ironwork, Woodwork, Modelling, Bookbinding. B. Girls—Needlework and Embroidery. (4) Similar Works from schools of a little higher grade.

A Notice on the Exhibition of the Primary Education of the Département du Nord.— The Département du Nord (area, 2195 square miles; population, 1,603,259 inhabitants) contains 2,185 public or private elementary schools (*écoles primaires*), with a staff of 5,475 masters and mistresses. The public elementary schools number 1670, and their staff consists of 3,697 masters and mistresses. The objects which are exhibited are classified into 4 groups: 1st, intellectual and manual work of the higher primary schools (boys and girls); 2nd, intellectual and manual work of the elementary primary schools (boys and girls); 3rd, plans of schools; 4th, detailed syllabus of the subjects taught in the primary schools of the Département du Nord; "Bulletin Administratif" (a periodical issued by the departmental administration), and "Bulletin Pédagogique" (a special review for primary schoolmasters).

I. *Higher primary Schools* (*Boys*).—There are sixteen schools of this description in the said department. All receive boarders and day scholars. To all of them are attached a number of entrance exhibitions. The syllabus includes, as a rule, the following subjects: ethics, the French language, handwriting, history, geography, modern languages, mathematics, book-keeping, experimental physics, chemistry, natural history, drawing, singing, gymnastics, and workshop instruction. Each school has its own syllabus, modified so as to meet the local requirements. The pupils receive instruction in adjusting pieces of apparatus, in carpentry, in turnery, in modelling, in sculpture, and are taught to work on iron, wood, stone, marble, and plastic materials. The advantage is twofold: the pupils learn the use of tools, and discover their natural bent.

Objects exhibited by three of these schools: copy-books containing pupils' exercises, drawings (geometrical and freehand), specimens of work done in the workshops; syllabus of subjects taught in each school.

Higher primary schools (girls). The only school represented at the Exhibition is that situate at Boulevard de la Liberté, Lille. The course of instruction lasts four years. Exhibits: copy-books containing the pupils' exercises (maps, book-keeping, handwriting, drawing, essays); specimens of practical work done by the pupils (cutting and seaming of clothes, sewing, embroidery, painting on silk); syllabus of the subjects taught.

II. *Elementary primary Schools (Boys and Girls).* — Children are received from 6 to 13 years. The education is, like in all other parts of France, gratuitous and compulsory. There are in each school three divisions: elementary, middle, and upper.

Exhibits of these schools: copy-books, in which the pupils write their first exercise, in every branch, at the beginning of the month; class-books, in which the masters or mistresses enter the work set for the following day; universal copy-books containing the pupil's daily exercises; practical work (boys); working on iron, wood; book-binding. (Girls) sewing and needlework.

III. *Plans of Schools.*—Plans of the Montesquieu School, and of the Rue Rivoli School (Lille), by M. Mongy, architect (Lille); of the school at Mons-en-Barœul, by M. Mahieu; of the Institut Turgot (Roubaix), by M. Richez; of the higher primary school at Fournes, by the pupils of the school. (*See above, Class* 34.)

IV. *Syllabus—Official Bulletin.*—Pedagogical Bulletin.

17. ACADEMIC INSPECTORATE OF THE CÔTE-D'OR. *See Class* 56, *Collective Displays.*)

18. POULAIN, M., École Primaire Supérieure, Illiers, Eure et Loir.—Diagram of Specimens of Manual Work. Course of Design, 'L'Éducation physique École primaire.'

19. MUNICIPALITY OF BAYONNE.—(1) Specimen of Work done in Schools. (2) Specimens of Orthography and French Composition by children of both sexes.

20. PREVOST ORPHANAGE, Cempuis, Oise (Director, M. ROBIN).—Works by Scholars. This Orphanage, originally founded in Paris during the war of 1870–71 by M. F. Buisson, was adopted a short time afterwards by a generous philanthropist, M. J. G. Prévost, who transferred it to Cempuis, and bequeathed his fortune to the Departmental authorities of the Seine for the maintenance of it. (*See special notice on the physical education, anthropometric observations, and course of education in the Orphanage.*) (*See also Class* .)

21. GUIBERT, LOUIS, Rocquencourt near Versailles.—Works by Scholars of the elementary class.

22. DAVID, M., Grosrouvre par Nouvant, Meurthe et Moselle.—Methods of teaching reading, writing, and geography.

23. VAQUEZ, Adjoint au Maire, 16 Arrondissement, Paris.—Synoptic Table of the History of France.

24. COUPIN, M., 30 Rue de Mirail, Bordeaux.—Works relating to Elementary Education.

25. COULET, T., Villers la Montagne, Meurthe et Moselle. — 'Carnet de Correspondance,' between schools and families, school drawings, exercises, &c., 1883.

26. ÉCOLE PRIMAIRE SUPÉRIEURE, Gerardmer, Vosges (M. T. MICHEL, Director).—Register and Monthly Reports of the School Debating Society.

27. HÉMENT, FÉLIX, Inspector General of Public Instruction, Nanterre Hors Concours).—(1) A collection of 12 drawings by Cicéri (60 centimetres by 40 centimetres), in chromo-lithography, and illustrating the following geographical terms: archipelago, canal, sluice or lock; cape, cliff, railway, viaduct, tunnel, roads, streams and rivers; confluence, hills, streams and rivers, glaciers, strait, gulf, volcano; isthmus; lake, glaciers; harbour; valley, torrent. Delagrave edition. (2) Cosmographic Diagrams designed by Fouché. (3) Elementary Works on the Natural and Mathematical Sciences.

28. VAST, H., PROFESSOR, 9, Rue de Greffuhle, Paris.—Blank Maps on slated cloth: France, Europe, Central Europe.

29. ELEMENTARY SCHOOLS OF THE DÉPARTEMENT DE LA CREUSE.—(1) Specimens of little toys and other work done by young children. (2) Preliminary training in manual work.

30. LIETOUT, MADAME, 13, Rue de Poissy, Paris. — Table of Comparative Measures. (*See also Class* 47.)

31. D'HENRIET, M., 28, Rue Chabrol, Paris.—Course of Drawing for Elementary Schools.

32. SÉGUIN et COURCELLE, St. Denis, Paris.—Enumerators.—Under the above name. MM. Felix Séguin and Jule Courcelle, schoolmasters at Saint Denis (near Paris), exhibit

two apparatuses, one for teachers, the other for pupils, with a view of assisting in the teaching of numeration, of decimals, addition, subtraction, multiplication, and division, of the metrical system (measures of length, area, volume), and of geometry (lines, surfaces, volumes), and of educating the sense of sight by means of the colours in which the various pieces of the apparatus are painted (viz., *violet*, *indigo*, *blue*, *green*, *yellow*, *orange*, *red*, *white* with *black* stripes, *black*).

33. **SÉGUIN & SAUVAGEOT, Bourges, Cher.**—Educational Course, published by Delagrave.

34. **REGRAIN, A., Chamblet, near Montluçon, Allier.**—Educational Works. (*See also Class* 56.)

35. **PILLET, M., 95 Rue Chevallier, Levallois, Seine.** — La Méthode Parlante. A method for teaching reading.

36. **PICARD, BERNHEIM & CO., 11 Rue Soufflot, Paris.**—Educational Works.

37. **WEIL ET MAURICE, 169 Boulevard St. Germain, Paris.**—Scholastic Works. (*See Room* 9.).

38. **HUSTACHE, MDLLES., Allevard, Isère.**—(1) Manuscript Treatise: "L'Éducation à l'École Primaire."

39. **BONNARD, P., 49 Rue de Grenoble, Paris.**—New System of writing Music. (1) The *Last Musical thought of Weber*, written according to this new method. (2) Tonality of instruments compared, &c.

40. **DEPOIN, J. (President of the French Shorthand Society), 23, Quai de l'Horloge, Paris.**—Schools Works executed with the aid of Shorthand.

41. **DUPLOYE, E., 23 Quai de l'Horloge, Paris.** — Method of teaching Reading and Spelling by shorthand writing. (*See also the Gallery, Albert Hall.*)

42. **LABONNE, M.**—Stenography.

43. **SHORTHAND SOCIETY (Prevost-Delaunay System); President, M. FONTAINE, Rue du 4 Septembre No. 2, Paris.**—(1) Course of Shorthand. (2) Pupils. (3) Works. (4) Papers.

44. **ANDRÉ, O. (Société des Ateliers de Neuilly, Paris).**—Scholastic Furniture.

46. **SUZANNE, M., 5 Rue Malebranche, Paris.** — Scholastic Materials, Tableaux ardoisés. (*See also Catalogue de l'Exposition Spéciale de la Ville de Paris.*)

46*a*. **GUILLEMIN.**—New maps of France. (Suzanne, publisher.)

47. **ROY, PAUL.**—Tablets for various coloured inks.

49. **MALLET, ARMAND, 77 Avenue Bosquet, Paris.**—Mallet's Microscopes for Schools.

50. **LECOCQ, Contre-Maitre du Matériel de la Ville de Paris.**—Scholastic furnitures. (*See Ville de Paris, Western Central Gallery.*)

51. **GARCET et NISIUS, 76 Rue de Rennes, Paris.** — School Materials and Furniture. (*The Furniture is in the Gallery of the Royal Albert Hall.*)

52. **DUPONT, PAUL, 49 Rue J. J. Rousseau, Paris.**—Specimen of a School Library (for elementary schools).

53. **DAGUERRE, A. B., 14 Rue Deguerry, Paris.**—Appliances and Diagrams for instruction by luminous projections. This apparatus has the following advantages:—1. Utilisation of all sources of light (colza oil, paraffin, lime-light, electric light, &c.). 2. The part for holding the object viewed can receive all sorts of pictures and objects of variable dimensions. 3. Luminous and neat images of large size obtained. 4. Cheapness of the apparatus. Accompanying this apparatus, there are a series of photographic pictures on glass, intended for the same mode of teaching. These pictures are on albumen, and are remarkable for their firmness and transparency. Lastly, a mechanical piece shows the distribution of steam in the engines, as well as the working of the piston and slide-valve.

54. **BRUNET, PROFESSOR, Sisteron College, Basses Alpes.**—Frames for protecting the edges of school books.

55. **LIBRAIRIE AGRICOLE DE LA MAISON RUSTIQUE, 26 Rue Jacob, Paris.**—Books for the teaching of Agriculture.

56. **PIERRE PETIT, Photographer, Place Cadet, Paris.** — Translucid Window Blinds for Schools: photographic reproductions of masterpieces of art on linen. New process.

Class XLIX.

Domestic Economy and other Forms of Technical and Industrial Education for Girls.—(*a*) Models and Apparatus for the teaching of Cookery, Housework, Washing and Ironing, Needlework and Embroidery, Dressmaking, Artificial Flower-making, Painting on Silk, Pottery, &c.; (*b*) Specimens of School Work.

MINISTRY OF PUBLIC INSTRUCTION AND THE FINE ARTS.—(1) Regulations. (2) Papers.

VILLE DE PARIS. (*See Special Catalogue.*)

CERCLE DE LA LIBRAIRIE.—(1) Collective Exhibit. (2) Works on Domestic Economy, Needlework, &c. (*See Class* 8.)

57. **VILLE DE ROUEN** (Seine Inférieure). **École professionnelle et ménagère. (Mme. Lassire, Head Mistress).**—Specimens of Needlework and other Work by the pupils.

58. **GIRLS' PROFESSIONAL SCHOOL OF MELUN** (Seine-et-Marne). **Mme. Valet, Head Mistress).**—(1) Linen. (2) Robes. (3) Hats. (4) Artificial Flowers. 5) Photographs.

59. **GIRLS' PROFESSIONAL SCHOOL OF BLÉNEAU** (Yonne). **(Mme. Guillour, Head Mistress.)**—Works by the Scholars.

60. **SCHEFER, MME., 90, Rue d'Assas, Paris.** — Treatise on Needlework and cutting-out.

61. **BÉRILLON, EUGÈNE, Auxerre, La Bonne Ménagère Agricole.**—Treatise on rural economy (1 vol.)

61*a*. **MME. GIROUX.**—Manuel d'Examen pour l'Enseignement de la Coupe et de l'Assemblage, &c. 1 vol.

62. **LASSIRE et GODEFROY, Mmes.**—Course of Dress Cutting.

63. **COCHERIS, PAULINE, Mme., Boulevard St. Marcel, Paris.**—(1) *Pédagogie des travaux à l'aiguille.* On Teaching of Sewing, 1 vol. in 12mo. This work is intended for teachers and pupils, and gives demonstrations of all kinds of needlework, accompanied by diagrams, which render the explanations more easily understood. Hygienic advice holds an important place in this book. A portion of the work contains a review of the present teaching of sewing, cutting and seaming, in the various parts of Europe, and especially in England. (2) *Tableau synoptique des travaux à l'aiguille.* This table, intended to be hung up in schools, is the indispensable companion of the above work. It gives all instruments used in sewing, &c., and explains the formation of all kinds of stitches.

64. **PREVOST ORPHANAGE, Cempuis, Oise.** — Boys' Winter and Summer Clothing. A specimen of a Cradle and other needlework, by the Girls of the Orphanage.

BISCHOFFSHEIM FOUNDATION (Working School for young Jewesses), 13, Boulevard Bourdon, Paris. (M. Maurice Block, Director.)—Works by the Scholars. (1) Work done in the school and workshops attached to it:—1 Basket of Flowers; 1 Baby's Gown; 1 Chemise; 1 Shirt (reduced model); 4 Exercise Books (Book-Keeping); 2 Exercise Books (Music); 3 Geographical Maps; 1 Ditto (larger size); 5 Exercise Books (English Ed.); 10 School Exercise Books (1st Division); 6 Ditto (2nd Division); 6 Ditto (3rd Division). (2) Plan of the School. Documents on the School.

Class LI.*

Science Teaching.—(*a*) Apparatus and Models for Elementary Science Instruction in Schools; Apparatus for Chemistry, Physics, Mechanics, &c.; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of the School Work in these subjects.

MINISTRY OF PUBLIC INSTRUCTION AND THE FINE ARTS.—(1) Catalogue and Specimens of Objects relating to scientific instruction granted to elementary schools. (*See Rousseau, materials for primary schools and Deyrolle's Musée scolaire (elementary schools.)*) (2) Catalogue and Specimens of Objects relating to Scientific Instruction granted to Training Colleges for elementary school teachers, as supplied by the firms—Rousseau (ancienne maison), Tramond, Deyrolle (musée for higher primary schools and natural history diagrams for training colleges). Auzoux Vve (Clastic anatomy), Lemercier Vve, Lütz (optical instruments for training colleges, and Daguerre. (*See these names.*) (3) Collection of Artificial Fruits for instruction in pomology in training colleges, supplied by M. Courtois, 12 Rue Mouton Duvernet, Paris. (4)

Class L. is amalgamated with Class LIII.

Apparatus for Instruction by means of luminous projections in normal and second grade schools. Projection examples drawn by M. Amand Durand, 69 Rue du Cardinal Lemoine. (5) Shed for Meteorological Instruments as supplied to all training colleges by the Education Department, through the Bureau Central Météorologique, 60 Rue de Grenelle, Paris (Director, M. Mascart), for the teaching of meteorology in training colleges. (*See Western Central Gallery; Outside. See also* Collection of Meteorological Instruments for training colleges supplied by M. Richard—barometer, thermometer, psychrometer, rain guage, hygrometer, weathercock, etc. The observations taken by the students of training colleges are transmitted to the Bureau Central Météorologique. See *Annales du Bureau* and *Bulletin International.*)—(6) Specimens of a collection of rocks supplied by the Paris Museum d'Histoire Naturelle.

66. **VESSIOT, Inspecteur d'Académie à Marseilles.**—Notices and Documents on teaching in Marseilles by means of dissolving views (projections lumineuses), specimens of lessons, notes, taken at lectures by scholars.

67. **MUSÉE SCOLAIRE, ÉMILE DEYROLLE (Elementary School).**—A Series of Wall Pictures for Teaching Natural Science. This series is divided into three parts. The first illustrates the elements of natural science, and is intended for small schools. The second part illustrates metallurgical processes, coal-mining, glass-making, animals useful and injurious to agriculture, mushrooms and fungi, the most common poisonous plants. The third part, intended for girls' schools, illustrates the history of textile plants, such as flax, hemp and cotton; the ceramic processes, faïence or earthenware, porcelain or china, stoneware, pottery; the cereals and the oleaginous and aromatic plants; the structure of a hen and changes of the egg during the process of incubation.

67*a*. **MUSÉE DEYROLLE (Higher Primary School).**—This collection has been prepared in order to meet the requirements of the higher primary schools. It consists of a wall picture (75 inches by 35 inches), representing the human skeleton; of another picture representing the skeleton of a bat; a collection of 100 useful and noxious insects, all indigenous to France; representatives of the myriapoda, arachnida, crustacea, annelida, vermes (amongst which there is to be found the trichina), the mollusca, echinodermata, polypes, sponges. Geology is illustrated by a collection of rocks, one of fossils, and one of minerals. Botany is illustrated by two herbaria, one of 100 plants, the other of 50 cereals. There are also instruments for collecting and preserving specimens, and a guide-book for carrying on these operations.

68. **DEYROLLE, ÉMILE, 23 Rue de la Monnaie, Paris.**—(1) Natural History Diagrams. (2) Typical Collections of Vertebrate and Invertebrate Animals, with appliances used for teaching natural history in training schools. (*See also Gallery, Royal Albert Hall.*)

69. **ROUSSEAU (ANCIENNE MAISON, now termed Société Anonyme), 44 Rue des Écoles, Paris.**—Materials for instruction in physics and chemistry (finishing course) in primary, secondary and training schools.

70. **AUZOUX, MADAME VEUVE & MONTAUDON, Nephew and Successor of DR. AUZOUX), 56 Rue de Vaugirard, Paris.**—*Dr. Auzoux's Clastic Anatomy.*—Collection of Anatomical Models composed of solid pieces which can be easily adjusted or separated, and removed piece by piece as in actual dissection. (Clastic, from κλάω, *I break off.*) Since 1842 till his death (1880) Dr. Auzoux had been steadily working at this collection, which actually contains no less than 150 models of human or comparative anatomy and of botany. These delicate and minutely accurate scientific specimens are fabricated in the village of St. Aubin d'Escroville (Eure). Specimens exhibited:—(1) Clastic Man, incomplete, 1 m. 16 cent., for colleges and middle-class public schools. (2) Egg of Hen, 148 times larger than ordinary egg (size of Epyornis egg. Is. Geoffroy Saint-Hilaire), on which by means of four different sections, the structures of birds' eggs can be studied, and the formation of the germ followed to its complete development. This colossal model enables the metamorphoses of the vitellus and vitelline vesicle and the formation of the allantoid to be traced. It not only simplifies the study of the embryology of birds, but also facilitates that of the mammalia. (3) Heart of Adult, divided in halves, showing the disposition of the cavities, the muscular fibres, vessels, nerves, valves, and orifices of the vessels. (4) Eye, complete. Very large. On this new edition are seen, as in the preceding, not only the muscles, vessels, nerves, membranes, vitreous humour, crystalline lens, &c. (each part removable), but also the different microscopic layers of the retina, choroid, and iris described by modern anatomists. (5) Ear (temporal 60 c. long), new edition, showing the internal, external, and central parts in their minutest details, the enlargement of the auditory nerves, &c. This model reproduces the recent studies of Corti, Rosenthal, Lewenberg and Reissner, and shows the action of the ossicles, the necessity of the fenestra ovalis, the fenestra rotunda, the membranous canals, the endolymph and perilymph, the double wall of the cochlea, the infundibulum, and the action of the air inclosed in the central ear, thus representing the wonderful mechanism of hearing in a manner that can be understood by all. (6) Larynx, showing the cartilages, muscles, vessels, nerves, tracheal artery and divisions of the bronchiæ to their minutest ramifications. (7) Foot of Horse with the pastern, showing the hoof, podophyllous tissues, plantar pad, vessels, nerves, &c., all of which parts can be detached separately; the hoof is divided as by Bracy-Clark, and the Charlier shoe is placed on it. (8) Stock (*Cherianthus Cheiri*), stalk,

leaves, and flowers at different degrees of development; complete flower and ripe fruit, showing the two valves (silique), dehiscence commencing: *a.* Flower only; *b.* Pod. (9) Grain of Wheat (*Triticum æstivum*, L.), 30 times the diameter, with its envelopes, embryonic layer, farinaceous mass, the embryo and its dependencies, which can be detached and replaced by an embryo in course of development by germination, and on which is seen all that constitutes the plantlet. (10) Spikelet of Wheat (*Triticum æstivum*), very large, showing, 1st, the glumes; 2nd, the glumelles; 3rd, the ovary and the two styles with their stigmas; 4th, the stamens; 5th, the nectarial glands, before and after fecundation, from the researches of Prof. Bidard (11) Cherry, Ripe, showing the different layers of the pericarp, the ovule and its envelopes. (12) Wood, piece of dicotyledonous woody stem (*Quercus communis*), three years old, greatly enlarged, upon which is shown the central pith, spiral vessels or tracheæ, medullary sheath, medullary rays, composition of woody layers, the annular vessels—rayed and dotted, lacunæ, the duramen and sap wood, cambium separating the woody layer from the cortex; on this last, the leaflets being separate, can be seen the epidermis, the suberous and herbaceous layers, the laticiferous vessels, and the fibres of the liber.

71. **LEMERCIER (MADAME VEUVE) 7 Rue Vavin, Paris.**—Illustrations of Structural Anatomy by the late Dr. F. G. Lemercier.

(The numbers are those of the Lemercier Catalogue.) 1. 'Structural Anatomy of Man.' By the late Dr. F. G. Lemercier, who was long assistant of Dr. Auzoux.—2. 'Stomach expanded.' (2 parts.)—3 'Structure of the Stomach.'—4. 'Gastric Peptic Gland.'—5. 'The Same withered.'—6. 'A Cystose Gland.'—7. 'Gastric Mucous Gland.'—8. 'Glands of Brunner.'—9. 'Structure of the Small Intestines.'—10. 'Glands of Lieberkühn.'—11. 'Villus of the Small Intestines.'—17. 'Anatomical Model (after the London figure deprived of its skin).'—19. 'Maxilla, with its Support.'—20. 'Big Molar-Tooth.'—22. 'Typical Foot of the Horse.'—24. 'A Bean.'—25. 'A Germ.'—26. 'A Small Nut.'—27. 'Two Grains of Pollen.'

72. **TRAMOND, M., 9 Rue de l'École de Médecine, Paris.**—Objects for teaching Natural History in normal schools, as supplied to the French Education Department.

73. **MENNEGLIER, M., Navenne, Haute Saône.**—Specimen of Herbarium for schools.

74. **SOCIÉTÉ ANONYME D'ÉLECTRICITÉ, 39 Avenue Marceau, Courbevoie.**—(1) Dynamo Electric Machine, with continuous currents. School model. (2) Accessories for demonstrating the effects produced by the machine.

75. **LUTZ, Optical Instrument Maker, 65 Boulevard St. Germain, Paris.**—(1) Collection of optical instruments in use in the training colleges. (2) Lamps and lanterns for dissolving views; appliances specially adapted for the primary schools.

BAUDRE, Honoré de St. Florence (Cher, France).—Collection of sonorous rough flints, found in France from 1812 to 1883 in chalky quarries, and forming two chromatic scales.

(N.B.—M. Baudre will give daily performances of this prehistoric music at the request of the visitors).

Class LII.

(Rooms 7 and 8 and Corridor.)

Art Teaching.—(*a*) Apparatus, Models, and Fittings for Elementary Art Instruction in Schools; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of Art Work, Modelling, &c., in Schools.

MINISTRY OF PUBLIC INSTRUCTION & FINE ARTS.—(Fine Arts Section.)—(1) Specimens of casts and prints to form an Art Museum for elementary schools, prepared according to the regulations of the Ministerial Commission on School Decoration. *a.* Art museum for boys' schools (*see Room* 7); *b.* for girls' schools (*see Room* 9). (Many schools have already been provided with similar collections.) Rapport of M. P. Mantz, with programme of Art museum for primary schools, training colleges, and *Lycées*. (2) Types of School Prizes (*Bonpoints scolaires*) for elementary schools, sanctioned by the Commission of *L'Imagerie Scolaire*. Bonpoints, reward cards, and images by Ravaisson, Quantin, Hachette, Prunaire, Suzanne, Goupil, Lebet, &c. Report by M. Havard, president of the Commission on School Prizes (*Room* 8). (3) Collection of casts for teaching drawing in primary training colleges and schools of secondary grade. Programme of the course of studies—Drawing Test in examinations for the higher certificate—Minute of 23 January, 1881 (J. Ferry), fixing the programmes of the teaching of drawing in elementary schools. (4) Examination for the certificate to teach drawing. Two frames showing specimens of time drawings done at the examinations—*a.* for the *1st grade*, *b.* for the *higher grade*. Two drawings from a relief executed in eight hours; perspective done in the same time. Three drawings from the living model done in eight hours. Drawing of anatomy done without copies.

VILLE DE PARIS. *See Special Catalogue.*

REIBER, ÉMILE, 54 Rue Vavin, Paris.—Panel (*Room* 7).—Exercises for the hand, the hand and eye, and the hand, eye, and the intelligence. Panel.—Alphabet of forms. A B C of forms, or drawing taught as writing, graduated exercises in tracing for beginners of every age. 12 books for the master and 12 for the pupils. Three Pamphlets on popular instruction in drawing. Album Reiber, 1st volume of the *Bibliothèque portative des arts du dessin.* This new method of teaching drawing aims at making the ordinary schoolmaster able to teach himself elementary drawing with a very short preparation. (*See also Classes* 39 & 48.)

77. **ARMENGAUD, AINÉ, 45 Rue St. Sébastien, Boulevard Voltaire, Paris.**—'School Decoration.' 5 Panels of Pictures for Schools, printed on the wall-paper system.

78. **PRUNAIRE, M., 59 Rue de Grenelle, Paris.**—(1) Two Series of School Bonpoints. (2) Three Prize Albums. (3) Two Series of Prizes in Envelopes.

79. **QUENTIN, M.**—Specimens of Prizes for Elementary Schools (*bonpoints scolaires*), and Fine Arts. *See Ministry of Public Instruction.*

80. **DELAGRAVE, CH., 15 Rue Soufflot, Paris.** (*See Corridor.*) (1) A collection of 10 casts derived from the antique by Prof. Sobre. (2) Geometrical outlines by M. Thomas. (3) A course of drawing in 64 sheets. (4) Order of Architecture, by M. Avoine. A collection of casts illustrating the Corinthian, Doric, Ionian and Tuscan orders of architecture. (5) Method of Anatomy, by Paul Colin and Debrie. This consists of 9 basso-relievos (height 39·37 inches), illustrating osteology, myology, and general anatomy. (6) Museum Collection, by Léon Chédeville, under the direction of MM. Claude Sauvageot, Auguste Racinet, and Louvrier de Lajolais. This consists of models executed, 1st, according to geometrical formulæ; 2nd, according to types selected from antiquity, the middle ages, the renaissance, and the 17th and 18th centuries.

81. **CERNESSON, L. C., 23 Rue Michel-Ange, Paris.**—(1) Elementary Grammar of Design. (2) Pupils' Drawing Books.

82. **RAVAISSON, F., INSPECTOR-GENERAL FOR HIGHER EDUCATION.**—(1) Collection of Models. (2) Reproductions of Masterworks of Art. (3) Diagrams and Porfolios.

83. **D'HENRIET, M., 28 Rue Chabrol, Paris.**—Rational Drawing Course: (1) Drawing from Copies. (2) Linear Drawing. (3) Drawing from Ornament.

84. **ARMAND-CASSAGNE, M., 12 Rue du Bac, Paris.**—Armand-Cassagne Course of Drawing.

85. **BERNARD, R., Professeur at the College of Digne, Basses-Alpes.**—A Manuscript Course of Drawing for Elementary Schools.

86. **TRAINING COLLEGES.**—Specimens of drawings, modellings, &c., done by the students of the Écoles Normales of Auteuil, Caen, Limoges, Le Mans, Orléans, Blois, Châlons-sur-Marne, Versailles, Amiens.

87. **GIBERT,—Grande Rue, Fontainebleau.**—Results of a two years' course of drawing on the Cassagne method. Elementary modelling.

Classes L. & LIII.

Handicraft Teaching in Schools for Boys.—(*a*) Apparatus and Fittings for Elementary Trade Teaching in Schools. (*b*) Specimens of School Work.

Technical & Apprenticeship Schools. (*a*) Apparatus and Examples used in Primary and Secondary Schools for Teaching Handicrafts. (*b*) Models, Plans, and Designs for the Fitting up of Workshop and Industrial Schools. (c) Results of Industrial Work done in such Schools.

MINISTRY OF PUBLIC INSTRUCTION.—(1) Specimen of the Work of Pupils in Public and Private Schools. (2) Manual Work in School: a photograph of a picture, by A. Trupheme, representing the school workshop with boys at work.

88. **MINISTRY OF COMMERCE, 25 Quai d'Orsay, Paris.**—(1) Schools for

Apprentices. (2) Schools of Applied Art. (3) School Works.—*Works done in the National School of applied Arts (École des Arts et Métiers of Aix-en-Provence).*

Group 1.—Specimens from the Turning and Pattern shop.

Group 2.—Specimens from the Foundry workshop.

Group 3.—Specimens from the Smithy.

Group 4.—Specimens from the Fitting-shop.

Group 5.—Various specimens of machinery, constructed by the pupils of the school.

Group 6.—Theoretical work (cours autographiés, albums of drawings, carnets d'épures, programmes of the theoretical lessons).

Group 7.—Central group of various specimens of iron work and foundry (quincaillerie, fontes d'art, &c.)

The school of Aix aims at forming skilled artizans able to become foremen, heads of workshops, and masters of industrial firms well conversant in the practice of mechanical arts. The admission is only by competitive examinations. The practical instruction is given in four workshops, and comprises the work of the smithy, foundry, fitting-shop, turning, and pattern-shop. There are in each school 300 places of pupils, borders or scholars. The Scholarships, complete or partial, are given by the State, through the Ministry of Commerce, or by the Councils General of the Departments. The fees are 600 fr. per annum for non-scholars. The school was created in 1843. There are two other schools of applied arts in France, one at Chalons-sur-Marne, the other at Angers. (*N.B.—This exhibit is in the French Court, Central Western Gallery, main building.*)

VILLE DE PARIS. (*See Special Catalogue.*)

89. ÉCOLE NORMALE SPÉCIALE DE TRAVAIL MANUEL, 10 Rue Louis Thuillier, Paris (Director, M. SALICIS).—Works of the Students. Examples the order followed in the artistic drawing course. (For the notice on this school, see Introduction, page 144.)

90. SCHOOL OF THE RUE TOURNEFORT, Paris. Photographs showing the succession of work in every kind of handicraft teaching. This school is the first primary public school of France in which rudimentary trade teaching was combined with ordinary elementary instruction. It was established on its present footing in 1873. For ages of six to ten the children have three hourly lessons per week in manual work; boys of ten and eleven are taught drawing, modelling, carving, joiner's work, and smith's and fitter's work, whilst in their twelfth year of age, the instruction is specialized, some taking as their principal study modelling and carving; others joiner's work and cabinet making; others again forging and fitting; but all have to devote a certain portion of time each week to the other subjects comprised in the complete course of manual work. The school hours are from eight in the morning to six at night, and in the highest class eighteen hours per week are given to manual work. (Extracted from the Report of H.M. Commissioners on Technical Education, 1884.)

91. HIGHER PRIMARY AND PROFESSIONAL SCHOOL OF ROUEN (M. T. DELARUE, Director). — Collection of Works by Pupils of the 3rd, 2nd, and 1st Class.

92. HIGHER PRIMARY SCHOOL OF VOIRON, ISÈRE (École Primaire Supérieure), M. BERTHUIN, Directeur.—Works from the School Workshops: 1 Crane, 1 Galvanometer, 1 Catch, 1 Electric Bell. This school was founded in October, 1882, in order to prepare for the creation of the National School of Higher Primary Education preparatory to Apprenticeship, which the town will soon possess. The school, meanwhile, aims at providing the industries and trades of the district with young men possessing the necessary theoretical knowledge, as well as valuable practical knowledge. The course of studies consists of lectures on ethics, reading, handwriting, grammar, composition, literature, history, geography, modern languages, arithmetic, geometry, algebra, trigonometry, descriptive geometry, mechanics, physics, chemistry, natural history, geometrical drawing applied to the industries, artistic drawing, book-keeping, music, and gymnastics. The workshop instruction includes modelling and moulding (clay, plaster, and cement), stone-cutting, joinery, carpentry, turnery (wood and metal), and blacksmiths' work. It is proposed to introduce weaving as a subject for workshop instruction. Special classes are conducted for candidates preparing for the Training Colleges of Primary Instruction, for the Schools of "Arts and Métiers," and the Veterinary Colleges, as well as for those who wish to enter the administration of public ways, such as the Post Office and Telegraph Departments.

93. VIERZON, PRIMARY SCHOOLS OF.—Works of the Scholars. (Art Teacher: M. Celerier, sculptor.) The entire range of instruction in this school is intended to be introductory to special apprenticeship schools like the École des Arts et Métiers. Works exhibited

4 Barbotine frames, 5 plates decorated drawings, &c. Several of the works are exhibited by permission of the owners, and the price of the sale is indicated on them.

94. **TECHNICAL SCHOOL, Évreux.**—Works of the Scholars. (1) Album of graphic works (descriptive geometry and mechanics). (2) Mechanical models executed by the pupils in the school workshops: (*a*) Apparatus to show effects of eccentrics, &c. (*b*) Modèle de petit tour. (*c*) Oldham Joint. (*d*) Model of crane. (*e*) Modèle d'assemblage.

95. **CHAIX, M.**—Documents, &c., relative to Technical School for Printers. (*See Class* 38.)

96. **LIVET INSTITUTE, Nantes.**—(1) Plan of the Institution. (2) Documents relating to the school, its progress, and methods of teaching. (3) Works by the pupils: Watchmaking. This Institution has more than 400 pupils (boarders and day-scholars), and occupies a total area of 1½ acres. In the principal building are the dormitories, dining halls, infirmary, &c.; opposite to this is the portion containing the class-rooms. These buildings are connected on one side with the workshops, and on the other with the various offices of the administration. The Institution, which receives pupils from six years of age, aims at preparing young people for industry, trade, the navy, and various public administrations. There are five workshops—(1) Mechanics. (2) Joinery and Models. (3) Laboratory of chemistry. (4) Foundry. (5) Clock and watch-making and mechanical works of precision. The machinery is set into motion by a steam engine (6-horse). The pupils make their own tools, as well as the school furniture and models for industrial drawing. Chemical analyses are undertaken in the laboratory for private persons and the trade. In recognition of his services to technical education, M. Livet has been appointed successively Officier d'Académie, Officier de l'Instruction Publique, and lastly a Knight of the Legion of Honour. The State and some of the Councils General maintain a number of exhibitioners at the Institution. By a decision of the President of the Republic, May 16th, 1874, the pupils of the Institution are admissible to the rank of mechanical engineering student of the navy.

97. **ECOLE DES ATELIERS DE LA MAISON (Christofle et Cie), 56 Rue de Bondy, Paris.**—14 panels of drawings done by the young apprentices whe spend only four and a half hours in the drawing class.

98. **PREVOST ORPHANAGE, Cempuis, Oise, P. ROBIN, Director.**—Works by the Scholars: wood carving, iron work, model of gun in wood by one of the pupils; elementary scientific collections done by the pupils, &c.

99. **PATRONAGE DES ENFANTS DE L'ÉBÉNISTERIE, Fondé en 1866. Founder and President, H. LEMOINE.** (See notice on this institution, *Room* 48.) A carved frame in beech, done by the pupils of the Patronage.

100. **INSTITUT INDUSTRIEL ET AGRONOMIQUE DU NORD, Rue Jeanne D'Arc, Lille (Director, M. OLRY).** This school (on which see H. M. Commissioners' report on technical instruction, 1882, v. I. p. 86) was founded (1872) and is maintained by the département du Nord and the city of Lille, and it also receives a subvention from the State. It comprises two distinct schools, the Industrial School and the Agricultural School. The instruction in the Industrial School has for object the formation of managers and directors of works for the North of France, especially for the sons of persons engaged in industry; that in the Agricultural School is for the purpose of giving the necessary scientific knowledge to the sons of the landed gentry and gentlemen farmers, and includes the so-called agricultural industries, such as the sugar manufacture and distillery. (Report above cited, p. 147.) Works exhibited: Drawings by students, plans, examples of work done by students in the workshop. Examples from the weaving school. Products from the chemical laboratory. (*See Annexe to the City and Guilds Institute.*)

101. **TECHNICAL SCHOOL FOR GIRLS OF ROUEN, Rue Beauvoisine.**—(École Professionnelle et Ménagère). Specimens of Needlework and Cutting Out by the pupils.

Class LIV.

(*Rooms* 10 *and* 11.)

Schools for the Blind and for the Deaf and Dumb.—(*a*) Apparatus and Examples for Teaching; (*b*) Specimens of School Work.

102. **MINISTRY OF THE INTERIOR, NATIONAL INSTITUTION FOR THE DEAF AND DUMB (DR. PEYRON, Director), 254 Rue St. Jacques, Paris.**—Works executed by the Inmates, Books, Views of the Institution, and Specimens of Uniform Orthophony (method of Dr. Colombat—Clinical Otology, audrometer of Dr. Charrière and Dr. Pile; Spiromètre, Classe d'Articulation, &c.). (*See Room* 10.)

103. **SOCIÉTÉ POUR L'INSTRUCTION ET LA PROTECTION DES SOURDS-MUETS PAR L'ENSEIGNEMENT SIMULTANÉ DES SOURDS-MUETS ET DES ENTENDANTS-PARLANTS.** — Publications relative to the phonomimic method adopted for the instruction of the deaf and dumb.

104. **MINISTRY OF THE INTERIOR, INSTITUTION FOR THE YOUTHFUL BLIND (Director, M. ÉMILE MARTIN), 56 Boulevard Montparnasse, Paris.**—Works by the Inmates. (*See Notice on this Institute at Room* 11, *No.* 1544.)

105. **SOCIÉTÉ DES ATELIERS DES AVEUGLES (President, M. LAVANCHY CLARKE), 1 Rue Jacquier, Paris.**—Brushes, Feather Dusters, &c., made by the adult blind.

106. **MAGNAT, M., Director of the Péreire School.**—Works for the Instruction of the Deaf and Dumb. (The same works can be adapted for ordinary schools.)

107. **CHERVIN, DR., 10 Avenue Victor Hugo, Paris.**—Table showing the geographical distribution of stammering in France.

Class LV.

Literature, Statistics and Diagrams relating to Group 6 and to the Effects of "Cramming" and Overwork on the Young, &c.

MINISTRY OF PUBLIC INSTRUCTION.—(1) Table giving extracts of the laws rendering elementary education in France, free, compulsory, and secular. (2) Documents relative to teaching in France. (3) Reports, Papers, &c., relating to second grade advanced education and learned bodies; also to technical and professional education. (4) Catalogue of Books, published under the sanction of the department. (5) Specimen of a collection of books granted by the Education Department to every training college to form a special library, for the use of professors and assistant masters and mistresses. These libraries receive from the Ministry of Public Instruction, as a nucleus, the works named in the list of the exhibits. There are at present 86 training colleges (men's) and 57 training colleges (women's) in France. All have received those grants of books. There are also in the chief towns of *cantons* libraries provided for the use of teachers of all schools. The number of those libraries was, according to the latest statistics, 2,507, possessing together 662,319 volumes. They receive also a nucleus of the works mentioned in the exhibited catalogue. (6) Documents relative to elementary education:—(*a*) Statistics of the schools, masters and budget of primary instruction; statistics; new statistics, 1884, O. Gréard; Grande statistique sur l'Enseignement primaire de la Seine; Decrees and minutes by the conseil supérieur; Reports of school inspectors; états de situation, 1879–81; Projets de résolutions votés dans les conférences d'instituteurs.

108. **PEDAGOGIC MUSEUM, 42 Rue Lhomond, Paris (Director, M. BERGER, Inspecteur général de l'Instruction publique).** — This Museum has been erected in pursuance of a decree of the President of the Republic, on the motion of M. Jules Ferry, Minister of Public Instruction, May 13th, 1879. It constitutes a permanent scholastic exhibition, and a centre of information on primary instruction in France and foreign countries.

This establishment includes five sections:—(1) School Furniture (*matériel scolaire*).—Plans of schools, types of class-room furniture. (2) Teaching Apparatus (*appareils d'enseignement*). —Diagrams, models, geographical, scientific and technological collections. (3) Collections of Works done by pupils (boys and girls), in the class-room and workshop. (4) Documents bearing on the history of education in France. (5) Central Library.—Books for teachers, books for pupils, school libraries, popular libraries. The Museum Library containing, at present, about 17,000 works, 6848 of which are derived from a valuable collection of the best treatises on education in all languages, formed by Inspector-General Rapet, and acquired by the State, in virtue of the law of June 5th, 1880. In January, 1882, there was established a circulating library, intended to supply helps for study to the teaching staff; 230 sets of different works compose the three sections of it—Literature, Science, Pedagogy—and are sent, free of expense, to all parts of France and Algeria. 124 newspapers (53 published in France, 71 published abroad), mostly relating to education and teaching, are received at the Pedagogic Museum, and put at the disposal of the public. A monthly scholastic publication, the "Revue Pédagogique," has since July, 1882, become the organ of the Musée Pédagogique, and is edited under the supervision of an Editing Committee appointed by the Minister of Public Instruction. The Museum is open daily from 10 a.m. to 4 p.m. to persons provided with students' tickets (*cartes de travail*), and to the public on Sundays and Thursdays. The *cartes de travail* are issued at the Musée Pédagogique, and at the Ministry of Public Instruction (Direction of Primary Instruction, 5th Bureau).

The Musée Pédagogique is exhibiting:—(1) A notice explaining the origin of the Museum,

its organisation, and the services it renders. (2) A specimen of its catalogue. (3) Three boxes, containing specimens of the works sent out by the circulating library. (4) Three statistical tables, showing the development of primary instruction in France. (5) Two photographs, representing travelling caravans (or excursions for special studies by students of training colleges.

CERCLE DE LA LIBRAIRIE. (*See Class* XLVIII.)

109. **CERCLE PARISIEN DE LA LIGUE FRANÇAISE DE L'ENSEIGNEMENT, 175 Rue St. Honoré, Paris.**—Documents and Diagrams. This society, founded in the year 1867, was incorporated in the year 1880. It numbered 2,480 members in 1883, and the annual subscriptions amounted to 22,100 francs (£884). This society distributes books, maps, &c., to various libraries (popular, communal, schools, regimental, &c.) in France, Algeria, and French colonies, and organises public lectures, illustrated by dissolving views. The total number of adherents to the Ligue de l'Enseignement is 200,000 members, divided between 1,500 branches spread all over France. The secretary of the Ligue is M. Emmanuel Vauchez, 175, Rue Saint Honoré, Paris.

110. **SOCIÉTÉ POUR L'INSTRUCTION ÉLÉMENTAIRE, 14 Rue du Fouarre, Paris.**—Synoptic Table of the Works of the Society.

111. **L'UNION FRANÇAISE DE LA JEUNESSE, 157 Boulevard St. Germain, Paris.**—Various Documents. Scholars' Works, &c.

112. **DE SABATIER PLANTIER, H., Ners, nr. Vezénobres, Gard.**—(1) Publications relating to children's entertainments.

113. **SOCIÉTÉ NATIONALE POUR L'ENCOURAGEMENT ET LE DÉVELOPPEMENT DE L'ÉDUCATION MORALE, CIVIQUE ET MILITAIRE EN FRANCE.** (*See De Sabatier, above.*)

115. **PICHE, M., 8 Rue Montpensier, Pau.**—(1) Documents relative to the Cantonal Museums. (2) Documents relating to the *cercle populaire d'éducation* at Lunéville, presented by the Sous-Préfet at Lunéville, M. E. Lafargue.

116. **DUJARDIN, LÉON, Juillac, Corrèze.**—(1) Manuscript on the Creation of Cantonal Institutes. (2) Placards.

117. **DOULIOT, E., Principal of the College and Industrial School, Épinal.**—Documents relating to Scholastic Excursions, Regulations, Photographs, &c. (*Caravanes scolaires*).

118. **SOCIÉTÉ DES FÊTES D'ENFANTS, 8 Ruelle des Saintes Maries, Nîmes, Gard.**—(1) Statutes of the Society. (2) The Education of Patriotism.

119. **GROULT, EDMOND, Lisieux, Calvados.**—(1) Five Year-Books of the Cantonal Museums. (2) Synoptic Table of a contemplated Cantonal Museum.

120. **DE MALARCE, M. (Secretary to the Congress on Provident Institutions), 68 Rue de Babylone, Paris.**—(1) Scholastic Savings Banks. (2) Documents and Diagrams relative to the *épargne scolaire.*

121. **DELVAILLE, C. (DR.), formerly Adjoint au Maire, Bayonne.**—Documents, Reports, &c., on the Bayonne Municipal Schools.

122. **ROTHSCHILD, M., 13 Rue des Saints Pères, Paris.**—Scientific Works for School Prizes and School Libraries.

123. **RACT et FALQUET, 16 Rue Cassette, Paris.**—Maps and School Books.

NARJOUX, M., 3 Rue Littré, Paris. (*See Group* 4 *in the Western Central Galleries, Class XL., No.* 50.)

124. **'L'ÉCOLE,' Scholastic Journal.—Office, 9 Galerie Colbert, Paris.**

125. **CARDOT, M., 377 Rue des Pyrénées, Paris.**—Historical Notice of the School Desk. *Historique de la table-banc.*

126. **ALMBRUSTER, A., Inspecteur d'Academie de Belfort.**—Atlas and various scholastic works.

127. **DESCOUBES, Directeur de l'École de Morcenx (Landes).**—Plan, Documents, and Notes on the Schools of the Compagnie du Chemin de fer du Midi at Morceix.

128. **REVUE DE L'ENSEIGNEMENT SECONDAIRE DES FILLES, a Periodical published in Paris.**—Collection of the last year's numbers. Two Documents on Secondary Education of Girls in France. The law which regulates the secondary education of young girls was voted by the French Parliament in 1880. Before that time this education was left almost without any supervision from the State. Now (in 1884) there are in France 19 lycées and 12 colleges for young girls. These establishments are, according to the towns, boarding and day schools, or day schools only, or day schools in which the students are under a certain supervision. The creation of lycées and colleges is proceeding at a rapid pace.

Class LVI.

Collective Displays of School Work and Appliances. School Museums.

MINISTRY OF PUBLIC INSTRUCTION & THE FINE ARTS.—(1) Portfolio representing interiors of French schools, photographed by M. Pierre Petit, Place Cadet, Paris. (2) Collective display of school work in elementary schools, urban and rural.

CERCLE DE LA LIBRAIRIE, Paris.—Collective exhibit. (*See Class* XLVIII.)

129. **ACADEMIC INSPECTORATE OF THE CÔTE-D'OR (Inspector, M. DESCHAMPS, Dijon).**—Collective Display of School Work, showing the work of children during one month and one year. (1) Work done in a school with a single class-room. (École de Bringes). (2) Work done in boys' and girls' schools containing several class-rooms.

130. **PAYSANT, M., Préfet de l'Aude, Carcassonne, Aude.**—Scholastic Museum, containing several categories.

131. **DANZAC & CIE., Naujan, near Bordeaux.**—Specimen of a Scholastic Museum, M. Eugène Danzac, a naturalist, has formed this collection, in order to supply the schools with a guide for the study of natural history. This collection contains specimens of the various classes and orders, and gives instructions in the art of collecting, preparing and preserving animals and plants of all descriptions. A collection of minerals and rocks illustrates the study of geology.

131*a*. **DORANGEON.**—Scholastic Museum (Ch. Delagrave, publisher). This is an interesting collection illustrating the processes of 75 trades, and containing more than 1200 samples and specimens. Moveable spheres for the study of Cosmography, by A. Letellier. This apparatus, highly recommended by the eminent scientist Abbé F. Moigno, represents the real movement of the earth and of Jupiter around the sun, or else the apparent movement of the sun on the ecliptic and the real movement of the earth around the sun at the same time.

For Deyrolle's School, Museum, *see Class* 51, *Corridor.*

Hachette et Cie., *Musée Saffray, see Class* 51, *Corridor.*

132. **REGRAIN, A., Chamblet, near Montluçon, Allier.**—Scholastic Museum made by the pupils and master. (*See Corridor.*)

VILLE DE PARIS.

(*Extract from the Catalogue de l'Exposition Spéciale de la Ville de Paris.*)
(*Western Central Gallery.*)

I. Group IV.—The School.—(*Service de travaux d'architecture.*)—Plans of Schools: (1) Training college for teachers at Auteuil, near Paris; architect, M. Salleron; finished in 1882; outlay, 2,025,000 francs, including the cost of the school furniture which amounted to 175,000 francs. (2) Higher primary school, Arago, Place de la Nation, Paris. Cost, 980,000 francs, This building contains 12 class-rooms, 2 largeamphitheatres, 1 examination hall, a library. 3 drawing class-rooms, 1 modelling-room, &c. Architect, M. Deconchy. (3) Boys' primary school, Avenue Duquesne, Paris; M. Leroux, architect. (4) Infant school (*asile*) for 220 children, Rue Jourdain, Paris; architect, M. Salleron. (5) Elementary school for boys and girls, Rue Blanche; architect, M. Salleron. (6) Specimen of temporary schools; architect, M. J. A. Bouvard. In order to ensure the immediate execution in the metropolis of the law of March 28, 1882, making attendance at school compulsory, the town of Paris was obliged to construct in great haste several temporary buildings destined to receive the children, for whom there was no accommodation in the schools. A system of light construction in wood, with double-existing partitions, has been adopted, and enabled the municipality to open, within five months after the promulgation of the new Act, 58 new schools accommodating 15,000 children. (7) School group (containing a school for boys, a school for girls, and an infant school), Rue Oudinot, Paris; architect, M. Deconchy.

[*For fuller details, see the Special Catalogue of the Ville de Paris. See also Gymnase Voltaire, above at Class* XXXIX.]

II. Group VI.—Education—(*Direction de l'Enseignement primaire.*)—M. Carriot, Directeur; M. Duplan, sous-directeur. (1) Documents relative to the organisation of the institution of public instruction of Paris. (See specially the *Notice* sur les établissements d'enseignement public de la Ville de Paris, 1864.) (2) Pedagogical works of the male and female teachers.

Primary Schools.—Teacher's desk; school table (2 seats), combination table for the writing, drawing, or needlework class, slated blackboard, compendium metrical, counter, geographical appliances; specimen of a school museum organized by the teachers and pupils; photographs; work done in school, &c. Specimen of school rewards. Honour List prize, reward cards, &c.

Infant Schools.—School furniture; views of school-rooms and dependencies, photographs, &c.: Work done in infant school.

Higher Primary Schools (boys'), 12 to 17 years old.—Specimens of work done by pupils; teaching of physical and natural sciences; photographs showing a manipulation room, a school museum, and a school workshop.

Higher Primary Schools (girls'), 13 to 17 years.—Specimen of school work. Time table. Specimens of book-keeping work; views of class-room, of amphitheatre, and a model kitchen.

Instruction of Adults—Night schools for scholars more than 15 years old. Programmes of commercial teaching for young men and young girls. Specimen of work done in classes.

Teaching of Drawing in Elementary Higher Primary and Night Schools.—Specimen of the progressive series of models. Drawings by the scholars. Photograph showing a plan of drawing and modelling.

Teaching of gymnastics and drill in schools.—Specimens of the apparatus employed for the teaching of gymnastics. Photograph of scholars during a gymnastic lesson. Model of uniforms of school batallions. Photograph showing boys at drill.

Handicraft teaching in elementary schools for boys (6 to 13 years old).—Series of work done by boys. Views of workshops.

Handicraft teaching in elementary schools for girls (6 to 13 years). Teaching of needlework. Specimens of work; cutting out.

Professional teaching for young men (13 to 17 years).—École Municipale Diderot, 60 Boulevard de la Villette, Paris. Specimen of work done in the school smithy, carpentering, turning, and fitting-up shops; locksmiths, and other works; photographs of school workshops and refectories.

Professional teaching for young girls (12 to 17 years).—Specimen of work done in the china painting studio. Corset making, embroidery, artificial flowers, &c. Photographs of the workroom of the Rue Violet School—Specimen of drawings by girls of the Schools of Rue Violet, Rue Bossuet and Rue Ganneron.

École Municipale de Physique et Chimie Industrielles, 42 Rue Lhomond.—(Work by students, 4 to 19 years). —Photographs of the Laboratories.

INSTITUT DES FRÈRES DES ÉCOLES CHRÉTIENNES, Rue Oudinot 27, Paris.—Specimens of School Work and Appliances. Work done by the pupils of the Schools of Paris, Lyon, Beauvais, Dreux, Annecy, Chambéry, Lille, Roubaix, Reims, &c. Also from the French School of Christian Brothers at Rome. (*See No.* 1560, *Room* 5.)

EXHIBITS FROM FOREIGN TECHNICAL SCHOOLS.

(Annexe to the Central Institution of the City and Guilds of London.)

INSTITUT INDUSTRIEL ET AGRONOMIQUE DU NORD DE LA FRANCE (Director M. A. OLROY).—Drawings by Students, Plans. Specimens of Work done by the Students in the Workshops. Specimens of Work from the Weaving School.

ADMINISTRATION FOR APPLIED ART SCHOOLS IN THE GRAND DUCHY OF BADEN, KARLSRUHE.—One Hundred Sheets, partly pencil, partly coloured. Examples. Specimens of School work belonging to the various courses, and comprising architecture, applied art drawing, freehand, surface painting, sketching from nature, figure drawing, designs for exercise, and prize exercises for the various courses. *Books.*—"Ornamental Formenlehre," by Professor F. S. Meyer. "Anatomy." Portfolio, with numerous reproductions from designs, by Herr Götz, Director. Specimens of decorative painting. Specimens from the wax-modelling course. Casts from the wax-modelling course. Works from the wood carving-course. Models of Ornament (in plaster). Figure Models (in plaster). Book with programme of exercises for the monthly prize. Bound yearly reports for the Session 1882–83.

GRAND DUCAL WOOD CARVING SCHOOL, Furtwangen, Baden.—The Grand Ducal School of Wood Carving at Furtwangen was founded in 1877, and opened on the 1st May in that year. The object of the establishment is to elevate and further the art of wood carving in the Black Forest, with special reference to the manufacture of clock cases. The municipality of Furtwangen provides the building and has in addition to look after the heating and lighting, all other expenses being defrayed by the Grand Ducal Government. The establishment is under the control of the Ministry of the Interior, and has a director, assistant, and technical master. Every boy who is mentally and physically sound, and is over fourteen years of age, is eligible for admission. There is no previous course of instruction necessary, nor, on the other hand, is any undertaking given as to how long a scholar must remain in the establishment. The usual term is, however, two to two and a half years. The local management is entrusted to a Committee of Inspection, comprising the following persons:—Herr R. Bichweiler, Architect, Director of the Grand Ducal Landesgewerbehalle, President; Herr E. Grieshaber, Burgermeister, Vice-President; Herr S. Siedle, Representative of the Villengen District; Herr F. Törger, of Waldkirch, Representative of the Freiburg District; Herr E. Kreuzer, Town Councillor, Furtwangen; Herr H. Hettich, Manufacturer, Furtwangen; Herr O. Furtwangler, Manufacturer, Furtwangen; Herr J. Koch, President and Director of the School. The school is provided with good models and drawing examples, and a certain sum is annually set apart for procuring the means of instruction in the school factories.

List of objects contributed to the International Health Exhibition from the Grand Ducal School of Wood Carving at Furtwangen, Baden.

(A) *Carving.*—Pilasters, "Filling-in," Garlands of Flowers, Rosettes, Cups, Ornaments, Album Covers, Photograph Frames, Wreath of Oak and Laurel, Clock Case, Flower Wreath, Nosegay, "Lehrgang der Schnitzereianfinge."

(B) *Plaster Models.* — Cup, Garland of Flowers, Ornaments, Swing with Rosette, "Erhenlaub."

GRAND DUCAL WATCH-MAKING SCHOOL, Furtwangen, Baden.—A Clock, made by E. Wehrle. Price £24.

ROYAL ACADEMY OF ARCHITECTURE, Stuttgart (Director Prof. EGLE).—(1) Plans and elevation of the house, also details as to the apportionment, erection, site and management of the school, together with plans and programmes of the various courses of instruction; also statutes and reports on the examinations and their results, &c. (2) Scholars' Works; (*a*) Manuscript Volumes and Drawing Portfolios, prepared by the scholars under the master's directions, models prepared by the scholars, photographs and school works. (*b*) Drawings and Designs by scholars. (3) Wall Tablets for practising the pupils.

WORKMEN'S COMMUNAL SCHOOL, Stuttgart (Director Prof. GAUPP).—Drawings and Casts made by Students.

COMMUNAL SCHOOL FOR FEMALE INDUSTRY, Reutlingen.—(1) Specimens of Needlework, Embroidery, Lace, &c. (2) Designs.

PRIVATE SCHOOL FOR FEMALE INDUSTRY, Stuttgart.—(1) Specimens of Needlework, Embroidery, &c. (2) Designs.

UNITED INDUSTRIAL ART SCHOOLS OF LOWER AUSTRIA, Technological Museum, I. Eschenbachgasse 11, Vienna.—

A. *School Works, Special Course for Cabinet Makers and Joiners.*—Seven Ornamental Drawings. 33 Designs for Cabinet Work. 11 Designs for Joinery. 7 Geometrical Drawings. 9 Working Drawings. Collection of Drawing Exercises for High Class Woodwork.

B. *School Works, Special Course for Training Female Workers in Basket Weaving.*—Twenty-five Freehand and Technical Drawings.

C. *Course of Instruction published by the Technological Museum.*—J. Burkart. Collection of the most important European woods used in the arts in characteristic sections. Price 10 florins (Austrian). F. Afh, "Patterns for Basket Weavers." (In German.) D. Avanzo, "Designs for Turnery Objects of Domestic Industry," 2 parts. (In German.) T. Tapla, "Exercises for Instruction in Geometrical Drawing and Projection. (In German.) 15 Diagrams for Elementary Instruction in Turnery. 4 for similar instruction in Wood Carving. 50 Designs for Joinery (old). 3 Plates and 50 Designs for Joinery (new). Original designs from the work on the Furniture of the Renaissance, period 16th and 17th centuries, by D'Aranzo, Architect and Professor at the Technological Museum. 30 Plates. 2 Cases containing Joinery Models.

D. *Objects Illustrating the Work of the Museum.*—1 Diagram showing the development of the Museum. 3 Plans of the Technological Museum. Yearly Report for 1883. Publications of the section for Woodwork, years 1880-1883, and 5 numbers for 1884. Similar publications from the Dyeing, Printing, &c., section, 15 in number. 27 Wall Diagrams for Technological Instruction.

SCHOOL OF INDUSTRIAL ART, GENEVA.—(1) Ceramic Panel. With coloured border in walnut frame. Designed and executed by the pupils (ladies) of the Ceramic Class. Price 2000 francs. (2) A Carved Wood Chest with ironwork and key in chiselled steel. Designed and executed by the pupils (gentlemen) of the class for Modelling, Wood Carving and Engraving. Price 4000 francs. (3) A Silver Cup, finely chased. Designed and executed by a pupil of the Modelling and engraving class. Price 1800 francs. (4) A Bronze Statuette, Calvin. Designed and executed by a pupil of the Modelling and Engraving class. Price 350 francs. (5) A Bronze Statuette, Luther. Designed and executed by a pupil of the modelling and engraving class. Price 350 francs. (6) A Bronze Group, William Tell. Designed and executed by a pupil of the modelling and engraving class.

JAPANESE EDUCATION SECTION.—(1) Models of School-Buildings, Fittings, &c. (2) Apparatus and Appliances for instruction. (3) Examples of work done by pupils in Schools of various grades. (*Basement, City and Guilds of London Institute.*)

BELGIAN EDUCATION SECTION.

Queen's Gate Annexe.

GROUP 4—THE SCHOOL.

Class XXXIV.

Designs and Models of Improved Buildings for Elementary Schools, Infant Schools and Crèches.

151. **DEMANY, E. Liége.**—School Plans.

152. **DEVIVIER & HANSEN, Spa.**—School Plans.

153. **FUMIÈRE, TH., Schaerbeek.**—School Plans. (*See Groups III. and VI.*)

154. **HOSTE, J., Blankenberghe.**—School Plans.

155. **HUBERT, J., Mons.**—Plans for a Normal Training School for Teachers.

156. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Plans and Photographs of Schools and Class-Rooms of all grades, Teachers' Residences, &c.

157. **QUÉTIN, E., St.-Gilles-les-Bruxelles.**—Plans and Photographs of Schools.

158. **SCHÆFFER, F., Antwerp.**—Plans for Hot Water Apparatus, Bath Rooms, &c.

159. **SERRURE, E. C., Saint-Nicolas.**—Designs for Town and Country Schools.

160. **VERSTRAETE, CH., Ghent.**—Buildings for the Boys' Orphanage at Ghent. Book containing an explanation of the system. (*See Group VI.*)

Class XXXV.

Apparatus and Fittings for Warming, Ventilating, and Lighting Schools, School Latrines, Closets, &c.

161. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Plans for heating and ventilation, models of stoves, &c.

162. **QUÉTIN, E., St. Gilles.**—Frame of Plans and Photographs of Schools, Scholastic Materials, &c.

163. **RONVAUX, DR. L., Namur.**—Ventilating Stove.

164. **VALLEZ ET DEMAEGHT, Brussels.**—Hygienic Appliances for Heating and Ventilating (called L. H. Vallez's Stove), used for Schools, Hospitals, &c.

165. **VAN HOECKE, F., Ghent.**—Hot-water Apparatus, applicable to Schools, Boarding-Houses, Shops, Workrooms, Greenhouses, &c.

Class XXXVI.

Special School Fittings for Storing and Drying Clothing.

166. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Specimens of Coat Racks, Umbrella Stands, and Wardrobes.

Class XXXVIII.

Precaution in Schools for preventing the Spread of Infectious Diseases, School Sanatoria, Infirmaries, &c.

167. **DASTOT (DR. A.) Mons.**—Granulous Ophthalmia in Schools, with treatise on the Operation of Cataract.

168. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Documents. *Boites de Secours*, &c.

169. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Various Papers and Regulations relating to the Inspection of Schools, and the course to be adopted on the outbreak of infectious diseases.

Class XXXIX.

Special Apparatus for Physical Training in Schools, Gymnasia, Apparatus for Exercises, Drill, &c.

169*a*. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—(1) Gymnastic Appliances and Instruments. (2) Plans and Views of Gymnasia, and Gymnastic Exercises. (3) Collection of Gymnastic Apparatus in use at the Normal State Schools; Official Regulations as to instruction in gymnastics in the various classes of schools, and also of the teachers of this subject. (4) Manual for the Gymnastic instruction of Boys, by Major Docx. (5) Similar Manuals for Girls by the same author.

Class XL.

Literature, Statistics, Diagrams, &c., relating to Group IV.

170. **DU MOULIN (DR. N.), Ghent.**—(1) The Epidemics at Nevele, at Landegem Considerations on the prophylaxia, and (2) Inquiry into the Sanitary Condition of Ghent on the occasion of the Cholera Epidemic in 1866—Ghent, 1879.

171. **FERSTRAERTS (DR. A.), Liége.**—*Le Scalpel*, a weekly Journal, organ of the Scientific and Professional Interests of Medicine, Pharmacy, and the Veterinary Art. *Le Médecin de la Famille*, or the Art of Preserving Health, treating of practical hygiene and everything relating to hygiene and domestic economy.

172. **HUBERT (J.), Mons.** — Treatise on the Normal State School for Elementary Teachers, Mons.

173. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Programmes, Documents, Statistics, &c. Publications relative to Scholastic Hygiene. The list is posted at the side of the collection of works exhibited.

174. **MIRGUET, V., Directeur de la Section normale primaire de l'État, Huy.**—(1) *L'Observateur*, scholastic review; years 1882, 1883 and 1884. (2) *Cours de pédagogie et de Méthodologie* for pupils in elementary schools. (3) *Notions de Psychologie* for similar pupils.

175. **RENARD, H., Jambes.**—Résumé of a Practical Course of Accounts. Outlines of Industrial Political Economy.

176. **MINISTRY OF THE INTERIOR, Brussels.**—Various Publications, Plans, &c., relating to Group IV.

GROUP 6.—EDUCATIONAL WORKS AND APPLIANCES.

Class XLVII.

Crèches and Infant Schools.—(*a*) Apparatus and Fittings for Crèches and Infant Schools; (*b*) Games, Toys and Kindergarten Amusements; (*c*) Models and Appliances for Teaching; (*d*) Examples of School Work.

177. **SOCIÉTÉ ANONYME: LA CONSTRUCTION INDUSTRIELLE, Brussels.**—Patent School Desks.

178. **CRECHE MARIE-HENRIETTE, Antwerp.**—(1) Complete Cradle. (2) Reports, Regulations, Photographs, Utensils, &c.

179. **DE MEESTER, A., Bernissart.**—(1) Selection of Reading Lessons for Elementary Schools. (2) Elementary Course of the French Language, 3 vols. (3) Useful Knowledge, with Calculations, 3 vols. (4) Mental Arithmetic, 3 vols. All these works are remarkable for their practical character.

180. **DE TOEKOMST, Antwerp.**—Essay on Popular Libraries, mode of working and results obtained. Annual reports for 20 years.

181. **GALLET, GUILLAUME, St. Josse-ten-Noode.** — Kindergarten, Rue du Moulin 47, à St. Josse-ten-Noode, under the direction of Madame Gallet.

182. **MINISTÈRE DE L'INSTRUCTION PUBLIQUE, Brussels.**—(1) Crèches and Infant Schools. (2) Fröbel and other toys, works of the mistresses and children. (3) Samples of Furniture and School Fittings. (4) Conferences for the teachers, to familiarise Modes of Instruction. (5) The Fröbel Normal Course. (6) Registers. (7) Works.

183. **SERESSIA, J., Huy.**—"L'École Communale," scholastic, scientific, and literary review, published by the Société d'Instituteurs at Huy.

184. **THYES, E., Ixelles.**—Preliminary exercises in practical linear drawing.

185. **WINDELS, D., Brussels.**—Gifts and Toys for Kindergarten.

Class XLVIII.

Primary Schools.—(*a*) Apparatus and Fittings; (*b*) Models and Appliances for teaching; Text-books, Diagrams and Examples; (*c*) Specimens of Work in Elementary Schools.

186. **AERTS, F., Nivelles.**—Instruction in Vocal Music. Various Books on this subject.

187. **BLONTROCK, H., Laeken.**—"Le Moniteur des Instituteurs Primaires," weekly scholastic review.

188. **BOUILLON, A., Brussels.**—(1) Practical Choir Singing. (2) Selection of 100 Canons with words. (3) Collection of School Chants. (4) Graduated Exercises.

189. **BRAUN, T., Government School Inspector.**—(1) Classical and scholastic works. (2) "L'Abeille," a scholastic review. (3) Miscellaneous Educational Works.

190. **CALLEWAERT BROTHERS, Brussels.**—(1) Classical Works. (2) School Furniture. (3) Speciality in Maps and Methods of Writing approved by the Council of Improvement.

191. **LA CONSTRUCTION INDUSTRIELLE, Brussels.**—(1) Models for Instruction in Normal and Reformatory Schools. (2) School Desks of various heights.

192. **DENYS-CALLEWAERT, P. P., Comines.** — *De Volksschool* (School of the People). Monthly Review.

193. **DESMET, L., Ghent.**—*De Vereeniging*, Teacher's Journal.

194. **DIERCKX, J., Schaerbeek.**—Works on Teaching and Hygiene.

195. **DOCX, G., Inspector of Schools (for Gymnastics).**—Official Handbook on Gymnasia Teaching. *La Gymnastique Scolaire*, numbers for six years. Various works on this subject.

196. **THE CHRISTIAN BROTHERS' INSTITUTE. Aloste Establishment.** —(The Christian Brothers in Belgium conduct 80 Elementary schools. 3 Professional Boarding Schools. 2 Normal Schools. 4 Schools for Architecture and Printing. 15 Classes for Arithmetic, Languages, Commerce, Drawing, &c., for adults.)—Collective Exhibit of School Works, Models, and Collections to illustrate natural history and physics.

196. **CHRISTIAN SCHOOLS (Various Towns).**—Collective Exhibit.

197. **ARENS, ANT., in religion, F. MARIANUS, Provincial.**—School Works.

198. **DE KOSTER, CH., in religion, F. MADIR, Visitor.**—(1) Flemish Reading Book. (2) Four Reading Cards, also in Flemish. (3) Lessons in Flemish, 2 parts (in French).

199. **VAN ACHTER, ACH, in religion, F. ACHILLE.**—Theoretical and practical Treatise on Method. Teacher's *Vade-Mecum*.

200. **PIRON, J. J., in religion, F. MÉMOIRE.**—(1) Method for demonstrating projections by movable models. (2) French Grammar. (3) Books on orthography, syntax, elementary arithmetic. (4) Metrical exercises with solutions.

201. **VAN DEN BROECK, P. L., in religion, F. Marcy.**—Works on Arithmetic, Geometry and Trigonometry (1 in Flemish).

202. **MATHIEU, C. J., in religion, F. MATHIEU.**—(1) Great Events in History, Universal History, Ancient Mediæval and Modern History. (2) History of Belgium. (3) The Province of Luxembourg.

203. **DE PAUW, CH., in religion, F. MARÈS JOSEPH.**—Drawing Books.

204. **LEROY, ALPHONSE, in religion, F. MANSUY-JOSEPH.**—(1) Course of Freehand Drawing and drawing with the aid of instruments. (2) Selection of reading Lessons in prose and verse.

205. **GOCHET, J. B., in religion, F. ALEXIS-MARIE, Carlsbourg.**—(1) Complete course of Geography: six large maps, eight small, four diagrams, one map case. (2) A series of ten manuals for master and pupils (3 in Flemish). (3) 7 Atlases, 14 Exercise Books in Geography, 6 Plaster Models in relief. (4) Submersible hypzometric model. (5) Reliefs of the Provinces of Namur, Liége, and Luxembourg. (5) Course of Botany and Synopsis of the Belgian Flora. (6) Course of Agriculture and Gardening.

206. **ST. JOSEPH'S INSTITUTE, Rue des Longs Chariots, Brussels.**—Adult Drawing Schools. Specimens of work given during the first, second, third, and fourth years of instruction, and of the work done from such specimens.

207. **FREE ELEMENTARY SCHOOLS of Brussels, Tournai, Verviers, Namur, Liége, Tamines, &c.**—Collective Exhibit of Scholars' Works.

208. **ST. LUKE'S SCHOOL, Ghent.**—Drawing Works. Elementary Work of the first and second years. Works from the Decorative Course, the Building Course, and Architecture Course.

209. **LAVELETTE-WEINKNECHT, Brussels.**—Collection of sample of skins in use by furriers (for a school museum).

210. **MANCEAUX, H., Mons.**—*Le Messager des écoles primaires du Hainaut.* Journal of education and teaching. Numbers from 1846 to 1883. 37 vols.

211. **MARTINOT, A., Nismes.**—Arithmometer.

212. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—(1) Elementary and Normal Schools. (2) Regulations, diagrams, samples of furniture, teaching materials. (3) Natural History and Technological Collections, models, prizes. School work. (4) Diagrams for Musical Instruction.

213. **MONITOR, E. A., Brussels.**—Writing Materials and Copy Books. Explanation of the course.

214. **NOÊL, L., Frasnes.**—*Aide Mémoire* for Adults, containing the outlines of Hygiene, Natural Sciences, Belgian History, Constitutional Law. Geometrical Figures as required by the official code.

215. **QUÉTIN, E., St. Gilles.**—School Furniture.

216. **RONVAUX, Namur.**—Course of Hygiene, adapted to the Belgian Government code for elementary schools.

217. **SLEECKX, D., Schaerbeek.**—*De Toekomst* (the Future), a Flemish Scholastic Review.

218. **SMETS, A., Molenbeek-Saint-Jean.** — *L'Avenir*, Scholastic, Scientific, and Literary Review.

219. **SOYER, Alost.**—School for army candidates. Particulars of the organization with samples of books. Models of furniture and rooms.

220. **ÉCOLE COMMUNALE, No. 13, Brussels.**—(1) Class Books, Register, Programmes, Rules, &c. (2) Collections for instruction in geometry and the natural sciences.

221. **WINDELS, D., Brussels.**—School Furniture and Fittings, Maps, Historical Diagrams, Classical Works, Models of animals.

Class XLIX.

Domestic Economy and other Forms of Technical and Industrial Education for Girls.—(*a*) Models and Apparatus for the teaching of Cookery, Housework, Washing, and Ironing, Needlework, and Embroidery, Dressmaking, Artificial Flower-making, Painting on Silk, Pottery, &c.; (*b*) Specimens of School Work.

222. **ÉCOLE PROFESSIONNELLE DE JEUNES FILLES, Mons.**—This school offers the advantages of the half-time system, the morning being devoted to instruction and the afternoon to initiation in the calling proposed to be followed by the scholars.

223. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—(1) Various objects for instruction in needlework and domestic economy. (2) Educational Diagrams, pupils work. (3) Museum of Domestic Economy.

Class L.

Handicraft Teaching in Schools for Boys.—(*a*) Apparatus and Fittings for Elementary Trade Teaching in Schools; (*b*) Specimens of School Work.

224. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Boys' Manual Work.

225. **WINDELS, D., Brussels.**—Bench and Joiner's Tool Chest on a reduced scale for instruction in manual labour for boys' schools.

Class LI.

Science Teaching.—(*a*) Apparatus and Models for Elementary Science Instruction in Schools; Apparatus for Chemistry, Physics, Mechanics, &c.; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of the School Work in these subjects.

226. **ARMAND, A. F., Mons.**—Mechanical Pen or Aërograph.

227. **DEVILLEZ, A., Mons.**—(1) One volume on the ventilation of mines. (2) Two volumes of a Treatise on Heat.

228. **ÉTABLISSEMENT DE CARLSBOURG, Paliseul, Province of Luxembourg.**—(1) Plans and views of this establishment and the neighbourhood; also of its fittings and educational collections. (2) Programmes, statistics, &c. (3) Professional course: collection of drawing examples, cartography, works relating to the special courses, herbariums, prepared by the scholars. Normal course: similar examples for this course.

229. **LA FRATERNELLE BELGE, Brussels.**—Papers, documents, and statistics, with diagrams of mortality and diseases.

230. **GOSSÉ, A., & CO., Brussels.**—Newspaper Map of the province of Luxembourg, with specimen of papers and various statistics.

231. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.**—Collections relating to physics, chemistry, natural history, and (in cabinet) scholars' works, various documents.

232. **NEUJEAN, A., & DELAITE, Liége.**—(1) Laboratory Fittings and Apparatus. (2) Appliances for teaching electricity and the industrial arts; photographs, electrotyping, gilding, plating, nickel plating, &c. (3) Glass ware for laboratory use. (4) Mineralogical collection. (5) Products for painting on glass and porcelain.

233. **ROBIE, F., Forest, near Brussels.**—*Bulletin Scientifique et Pédagogique de Bruxelles* (monthly review).

234. **WINDELS, D., Brussels.**—(1) Ethnographical Types (5 heads of various races). (2) Insect boxes with the metamorphoses. (3) Physical diagrams.

Class LII.

Art Teaching.—(*a*) Apparatus, Models, and Fittings for Elementary Art Instruction in Schools; (*b*) Diagrams, Copies, Text-books, &c.; (*c*) Specimens of Art Work, Modelling, &c., in Schools.

235. **ACADÉMIE DE DESSIN, Ath.**—Specimens of School Works; shaded drawings; modelling.

236. **BEAUJOT, CH., Liége.**—Works of handwriting, copybooks, &c.

237. **CLUYTENS-SUETENS, Malines.**—Imitation of Wood and Marbles for painters' schools, with specimens of work done from the examples.

238. **DE CLERCQ, P., Ninove.**—Drawing Works.

239 **DE TAEYE, E., Cortenberg.**—Drawing Works.

240. **DIERCKX, J., Schaerbeek.**—Method of teaching Handwriting in Elementary and Normal Schools. Children's work done on this method.

241. **ÉTABLISSEMENT DE CARLSBOURG, Paliseul, Province of Luxembourg.**—Professional Course. (*See Class* 4.)

242. **FUMIÈRE, TH., Schaerbeek.** — (1) The Decorative Arts at the Belgian Exhibition. (2) Exhibitions and their Influence on Decorative Art. (3) A few Words on Dwellings and their Furniture. (4) Amsterdam Exhibition and Belgian at the same. (5) Means of Improving the Working Man's Lot. (6) Louvain Society for the Construction of Cheap Dwellings. (7) Frame of Designs.

243. **MINISTER OF THE INTERIOR ACADEMY OF THE FINE ARTS AND DESIGN.**—(1) Collective Exhibit formed by the Academies of Louvain, Ghent, Soignies, St. Nicolas, Malines, Termonde, Courtrai, and Lierre:—1. Elementary Instruction in Drawing; 2. Intermediate Instruction; 3. Technical Instruction. (2) Decorative Painting of Drawings relating to Sculpture, Furniture, Architecture, Masonry and Stone Cutting, Carpentry, and Joinery; Architectural Composition.

244. **ROBELUS, P.-C., Ghent.**—Drawing Examples for Elementary and Second Grade Schools.

245. **SOUVENIER, H., Hasselt.**—English Writing Course.

246. **SERRURE, E.-C., St.-Nicolas.**—(1) Design for a Town School for both Sexes. (2) Design for a Village School with Drawing School. (3) Bound Atlas Course of Classical Architecture.

247. **STROESSER, J. P., Schaerbeek.**—(1) Drawing Examples and Models. (2) Principles of Stereoscopy for elementary schools. (3) Plane and Solid Geometry. (4) Crystallography. (5) Geography and Astronomy. (6) Notice on the Solar System. (7) Planimeter Celestial Mechanism.

Class LIII.

Technical and Apprenticeship Schools. — (*a*) Apparatus and Examples used in Primary and Secondary Schools for teaching Handicrafts; (*b*) Models, Plans, and Designs for the Fitting up of Workshop and Industrial Schools; (*c*) Results of Industrial Work done in such Schools.

248. **ADMINISTRATION COMMUNALE, Anvers.** — (1) Liége Professional School. (2) Plans and Designs.

249. **ASSOCIATION POUR L'ENSEIGNEMENT PROFESSIONNEL DES FEMMES, Brussels.**—(1) Drawings and Aquarelles. (2) Ceramic and Fans. (3) Artificial Flowers. (4) Account Books. (5) Needlework and Dressmaking.

250. **ÉCOLE PRATIQUE D'HORTICULTURE DE L'ÉTAT, Vilvorde.**—(1) Plan in Relief of the Establishmeut. (2) Documents relative to the Schools.

251. **ÉCOLE PROFESSIONNELLE DE JEUNES FILLES, Antwerp.**—(1) Designs for Lace and Embroideries. (2) Artificial Flowers. (3) Ten Diagrams to illustrate the Manufacture of Artificial Flowers.

252. **ÉCOLE MOYENNE PROFESSIONNELLE DE DEMOISELLES, Liége.**—(1) Dresses. (2) Linen. (3) Artificial Flowers. (4) Drawing and Painting.

APPLICATION COLLECTIVE DES ÉCOLES INDUSTRIELLES ET PROFESSIONNELLES.—(1) Regulations. (2) Programmes. (3) Time Table. (4) Specimens of Certificates. (5) Library Catalogues. (6) Drawing Examples. (7) Models. (8) Photography. (9) Dyeing. (10) Weaving.

Elementary Instruction —(1) Freehand. (2) Geometrical Drawing and Flat Ornament. (3) Instrument Drawing. (4) Projection. (5) Perspective. (6) Mining and Metallurgical Drawing. (7) Building Construction. (8) Furniture. (9) Naval Construction. (10) Lace. (11) Painting. (12) Decorative Painting. (13) Weaving. (14) Dyeing, &c., with examples.

253. **ÉTABLISSEMENT DE CARLSBOURG, Paliseul, Province de Luxembourg.** (*See Class* 51.)

254. **DE PAW, CH., in religion, F. MARES-JOSEPH.** (*See Class* 48.)

255. **LEROY, ALPHONSE, in religion, F. MANSUY-JOSEPH.** (*See Class* 48.)

256. **MINISTRY OF THE INTERIOR, Brussels.**—(1) Hygiene Library of the principal works on this subject, including official Belgian publications. (2) Regulations for Professional Schools in Belgium.

258. **MATHIEU, C. J., in religion, F. MATHIEU.** (*See Class* 48.)

259. **PERON, J. J., in religion, F. MÉMOIRE.** (*See Class* 48.)

260. **VAN DEN BROECK, P. L., in religion, F. MARCY.** (*See Class* 48.)

Class LIV.

Schools for the Blind and for the Deaf and Dumb.—(*a*) Apparatus and Examples for Teaching; (*b*) Specimens of School Work.

261. **GRÉGOIRE, E., Berchem-Ste-Agathe.**—The Deaf Mute. His infirmity, cure, character, education, past life, and future.

262. **ASYLUM FOR THE DEAF, DUMB, AND BLIND OF BOTH SEXES, Bruges.**—(1) Various Trade Objects used in the instruction of the Deaf and Dumb. (2) Maps in Relief. (3) Books on the Subjects. (4) Physical and Intellectual Works for the Deaf and Dumb.

263. **VAN DER HAEGEN, E., Schaerbeek.**—Course of Freehand Drawing, with applications to the principles of ornament and drawing from nature.

264. **VERSTRAETE, E.-C., Ghent.**—System of Instruction for the Deaf and Dumb.

265. **WELT, SCHMOELE, & CO., Antwerp.**—Chamber Electric Organ.

266. **WINDELS, D., Bruxelles.**—(1) Desks with Stools for the Deaf and Dumb. (2) Animals in Reduced Model.

Class LV.

Literature, Statistics and Diagrams relating to Group VI., and to the Effects of "Cramming" and Overwork on the Young, &c.

267. **DIERCKX, J., Schaerbeek.**—Review of European Literature, from the point of view of practical art and hygiene.

268. **EVRARD L., Brussels.**—The Health of the People. (A prize work.)

269. **LEBON, LÉON, Ixelles.**—(1) Elementary Instruction in Belgium. (2) The War on Ignorance. (3) Social Peace. (4) History of the Education of the People, and other works.

270. **LEY, F., Brussels.**—Two Books on Teaching.

271. **MANCEAUX, H., Mons.**—(1) Belgian Library for the Diffusion of Knowledge on Science and Art. (2) Zoology, Palæontology. (3) Modern Belgium. (4) Collection of Greek, Latin, and French Classics. (5) Elementary Education Manuals. (6) Exercises. (7) Atlases. (8) Course of Mining. (9) Heating, Ventilation, &c.

272. **MINISTRY OF PUBLIC INSTRUCTION, Brussels.** — (1) Literature Statistics. (2) Teachers' Library. (3) Statistical Tables and Diagrams.

Class LVI.

Collective Displays of School Work and Appliances. School Museums.

273. **ÉTABLISSEMENT DE CARLSBOURG, Paliseul, Province de Luxembourg.** (*See Class* 51.)

274. **DIERCKX, J., Schaerbeek.**—The methods of writing in general use condemned by the doctors of France, England, Germany, and Belgium.

275. **MERTENS, A., Brussels.**—(1) Frames. (2) Chromos. (3) Specimens of good Scholastic Work.

276. **LE VESTIAIRE LIBÉRAL, Liége.**—Object of the Work.

VILLE DE LOUVAIN.

CITY OF ANTWERP. (*The City of Antwerp possesses* 10 *Kindergartens*, 25 *free elementary schools*, 5 *paying schools.*—(1) Exhibit, illustrating the complete equipment of a Kindergarten. (2) Similar Exhibit (with plan of schools), illustrating ladies' second-grade schools. (3) Similar Exhibit, as to Kindergarten and communal schools. (4) Primary Communal Schools: exhibit illustrating the instruction given in these schools, with books, plans, &c. (5) Elementary Schools (*Ecole Primaire*): similar exhibit as to these schools.

SECTION II. SCHOLASTIC HYGIENE.

GROUP 6.

CLASS LV.

Literature, Statistics and Diagrams relating to Group VI. and to the Effects of "Cramming" and Overwork on the Young, &c.

I. OFFICIAL DOCUMENTS.

CENTRAL ADMINISTRATION MINISTRY OF PUBLIC INSTRUCTION. — (1) Publications of the Department. (2) Condition of Public Instruction, with Statistics. (3) Condition of Elementary Instruction, with Statistics. (4) Laws and Regulations Relating to Elementary Instruction. (5) Various Scholastic Institutions.

CLASS XXXIV.

Designs and Models of Improved Buildings for Elementary Schools, Infant Schools and Crèches.

II. SCHOOL PLANS.

Elementary Schools.

(6) Instructions Relating to Elementary Schools, one table. (7) Detailed Plans of Commercial Elementary Schools, selected as types from the different parts of the country. (8) Photographs. (9) Building Instructions. (10) Detailed Plans of sites for normal schools erected or to be erected at Antwerp, Bruges, Ghent, Hasselt, Jodoigne, Liége, Mons, Namur, Tournai, Verviers. (11) Photographs, giving views of schools. (12) Plans for the building and furnishing of Royal and Second Grade Schools.

CLASS XXXV.

Apparatus and Fittings for Warming, Ventilating, and Lighting Schools, School Latrines, Closets, &c.

III. HEATING, VENTILATION, AND LIGHTING.

Specimens Illustrative of this System.

(12a) Normal Teachers' School at Ghent. Plans of the System of Heating and Ventilation with hot water at low pressure. (13) *Section normale d'instituteurs à Couvin.* — A Similar Plan. (14) Ventilating Stoves in use in certain schools of the province of Antwerp.

IV. HYGIENIC AND MEDICAL SERVICE IN SCHOOLS.

(15) Inspection of Schools from a hygienic point of view. Plan of Organisation by M. Devaux. (16) Hygienic and Medical Inspection of Schools. (17) Scholastic Hygiene. (18) Manual on First Aid in case of Accidents. (19) *Bureau d'Hygiène*, Brussels. Hygienic Inspection and Medical Service of Schools. Specimens of Documents. (20) Specimens of the *boîte de secours* deposited in the elementary communal schools at Brussels. (21) Documents relating to the Sanitary Inspection of Elementary Schools at Antwerp, Ghent, and Liége.

V. GYMNASTICS.

(22) Plans of the Gymnasium of the Normal School for Teachers, Bruges. (23) Views of the same. (24) Views of the Interior of the Gymnasium of the Normal School for Teachers at Lierre. (25) Open Air Gymnastic Exercises at the same school. (26) View of the Interior of a similar school at Liége. (27) Collection of Gymnastic Apparatus in use in Government Normal Schools. (28) Gymnastic Instruments. (29) Official Programme for Gymnastic Instruction, (1 tableau.) (30) Gymnastic Instruction. Special Training of Teaching Staff. (31) Major Docx's Manual of Gymnastic Instruction for Boys. (32) The same for Girls.

CLASS XL.

Literature, Statistics, Diagrams, &c., relating to Group IV.

VI. PUBLICATIONS RELATING TO SCHOOL HYGIENE.

(33) Belgian Works.
The List is attached to the Collection of Works exhibited.

SECTION III.

GROUP 6.—ELEMENTARY EDUCATION.

Class XLVII.

Crèches and Infant Schools.—(*a*) Apparatus and Fittings for Crèches and Infant Schools; (*b*) Games, Toys and Kindergarten Amusements; (*c*) Models and Appliances for teaching; (*d*) Examples of School Work.

VII. KINDERGARTEN.

(34) Teaching Organisation of Kindergarten. Preparation of Teachers' Examinations. Conferences, Programme, Time Tables, &c. (35) Documents relating to the Normal Fröbel Course. (36) Belgian Works on the Fröbel System. (37) Furniture. (38) Didactic Examples. (39) Appliances for teaching Piquage and Embroidery by Mdlle. Sadzot. (40) Toys by M. Jules Guillaume. (41) Toys for construction by means of the Prism and Cube; Specimen Box of Solids; Guide. (42) Twenty-four Pictures of Animals by Lentemann. (43) Goyer's Figures, Kind Treatment of Animals. (44) Works by Teachers in Kindergarten at Brussels. (45) Works by children in the Brussels Kindergarten. (46) Collective Exhibit of Works furnished by the Kindergartens in Aloost, Binche, Blankenberghe, Bruges, Brussels (Rue du Poinçon School), Charleroi, Fosses, Furnes, Ghent, Grammont, Havelange, Heyst-sur-Mer, Hoogstraten, Liége, Malines, Molenbeek-St-Jean, Péruwelz, Petit-Rechain, Seraing, Ypres, &c.

ELEMENTARY AND NORMAL SCHOOLS.

§ 1. School Furniture.

Elementary Schools.

(49) Specimens of School Furniture.

Normal Schools.

(50) Specimens of furniture for normal schools.

§ 2. Didactic Appliances, Collections, prepared by Teachers and Pupils.

A. Calculation.—B. Metric System.—C. Geometric Figures.—D. Land Surveying.

(51) Teaching Calculation in Elementary Schools (6 arithmometers). (52) Teaching the Legal System of Weights and Measures. Collection of Weights and Measures. (53) Instruction in Geometrical Figures, Teachers' Work. (54) Instruction in Geometrical Figures, Pupils' Work. (55) Instruction in Land Surveying, Collection of Instruments.

E. Geography.

(56) Didactic Appliances for Normal Schools. (57) Collection of Atlases used in Normal Schools. (58) Stroobant's Monuments of Architecture and Sculpture in Belgium. (59) Views of Remarkable Monuments in Belgium. (60) Twenty Geographical Tables by Lehmann. (61) Works by Pupils in Normal Schools, Relief Plans, Maps. (62) Didactic Teaching common to Normal and Elementary Schools. (63) Didactic Appliances for Elementary Schools, Globes. (64) Maps, &c., on L. Genonceaux' System for Second Grade Schools. (65) Local Geography. (66) Collection of Atlases for use in Elementary Schools. (67) Relief Maps. (68) Portfolio of Maps.

F. History.

Normal and Elementary Schools.

(69) Diagram of Belgian History by Buschman. (70) By J. Gerard.

Normal Schools.

(71) Atlas of Historical Geography.

G. Intuitive, Demonstrative and Practical Teaching in the Elements of Natural Sciences and Technology.

First Series—Zoology.

Didactic Appliances—Normal Schools.

(72) Catalogue of Collections of Zoology for a Normal School. (73) Illustrated Fauna of the Belgian Vertebrata, by A. Dubois.

Elementary Schools.

(74) Typical Collection for Zoology in Elementary Schools—Skeletons, Stuffed Animals. (75) Collection of Insects for Elementary Schools. (76) Plates representing Natural History. (77) Zoological Diagrams. (78) Five Diagrams of Human Anatomy. (79) Diagrams for Teaching Natural History. (80) The National Fisheries of Belgium. (81) Synoptic Table of insectivorous Birds.

Collection of Zoology.

(82) Collections prepared by Pupils in Normal Schools. (83) Collections prepared by Teachers. (84) Collections prepared by Pupils in the preparatory course of Normal Schools.

SECOND SERIES.

(85) Industries employing animal substances—Tanning. (86) Wool. (87) Felt. (88) Silk (89) Beekeeping.

Third Series—Botany.

(90) Sixty Herbariums made by Pupils in Normal Schools, &c. (91) Nine Herbariums made by Teachers. (92) Thirteen Herbariums made by pupils in elementary schools. (93) Four Botanical Tables. (94) Three Plans of Botanical Gardens.

Fourth Series—Arboriculture and Agriculture.

(95) Tables made by teachers for instruction in arboriculture. (96) Four Plans for teachers' gardens. (97) Collections of agricultural instruments (reduced size). (98) Collection of grains.

Fifth Series—Industries using Vegetable Substances.

(99) Collection of various kinds of woods. (100) Hemp Industry. (101) Flax industry. (102) Cotton industry. (103) Straw Plaiting. (104) Winnowing. (105) Paper. (106) India-Rubber. (107) Tobacco. (108) Brewing. (109) Manufacture of Hollands. (110) Sugar Manufacture.

Sixth Series—Mineralogy. Industries employing Mineral Substances.

(111) Collection of mineralogy for use in Belgian normal schools by Professors Chalon and Malaise. (112) Collections prepared by pupils in normal schools. (113) Collections prepared by teachers. (114) Collections prepared by pupils in elementary schools.

Seventh Series—Instruction in Elements of Physics and Chemistry.

(115) Catalogue of collections for instruction in physics and chemistry. (116) Collection of physical instruments for use in elementary schools. (117) Barometer for use in schools. (118) Lead line, mason's level, trowel, pulleys, &c. (119) Model of lightning conductor. (120) Collection for teaching agricultural chemistry to adults. (121) Collection of appliances and chemical products placed at the disposition of each teacher who has followed the normal course of agriculture organized in 1883 at the State Institute of Agriculture, Gembloux.

H.—INSTRUCTION IN DRAWING.

Elementary Schools.

(122) Black Board for practising freehand. (123) Text Books of Drawing. (124) Slates used for each of the three grades. (125) Drawing Book. (126) Collective Exhibit of Drawing Books.

Normal Schools.

(127) Black Board. (128) Appliances, with moveable planes, for studying projection. (129) Two steps with eight easels and stools. (130) Pedestal and model. (131) Plan and section of the drawing class-room at Bruges Normal School. (132) Models in iron wire, zinc, and plaster. (133) Collection of scholars' drawings showing gradation of the exercises. (134) Drawing Manuals. (135) Collection of diagrams for teaching the outlines of history of art. (136) Collective Exhibit of Scholars' Works.

I.—INSTRUCTION IN MUSIC.

Section normale d'Institutrices de Bruxelles (Rue des Visitandines.)

(137–140) Diagrams for teaching music. (141) Formation of major and minor scales. (142) Copy Books. (143) Manuals.

§ 3.—Organisation.

(144-154) Regulations, Programmes, Registers, and papers relating to the organisation of elementary schools.

Normal Schools.

(155-164) Similar books and papers relating to organisation.

§ 4.—Pupils' Works.

Elementary Schools.

(165) Collection of copy books according to the first three standards of the code of 20th July, 1880. (166 & 167) Similar collections.

Normal Schools.

(168) Collective Exhibit of the works of male and female pupil teachers.

DOMESTIC ECONOMY AND NEEDLEWORK.

§ 1.—Domestic Economy.

(169) Collective Exhibit from Normal Schools for women teachers. (170) Collections of Students from the preparatory courses and work-rooms of the Normal Schools.—Numbers 145 and 174. (171) Collection from elementary schools.—Numbers 158 and 174.

§ 2. NEEDLEWORK.

Governesses' Schools.

(172) *1st Series.* Exhibition from *La Section normale d'Institutrices*, Rue des Visitandines. à Bruxelles. (173) *2nd Series.* Collective Exhibits from the Normal Schools of Arlon, Bruges, Brussels (Rue de Malines), Ghent, Hasselt, Liége, Louvain, Mons et Tournai. (174) *3rd Series*, Collective Exhibit of students from the preparatory courses and work-rooms of the Normal School.

Elementary Schools for Girls.

(175) *4th Series.* Collective Exhibit from various Belgian Schools. (176) Specimens and Appliances for teaching needlework. (177) Diagrams relating to the same.

Class L.

Handicraft Teaching in Schools for Boys—(*a*) Apparatus and Fittings for Elementary Trade Teaching in Schools; (*b*) Specimens of School Work.

X. INSTRUCTION IN MANUAL LABOUR FOR BOYS.

Ecole Primaire Communale No. 12, *Brussels.*

(178) Modelling, Joinery, Turnery, Ironwork, Locksmith's work.

Section Normale d'Instituteurs, Brussels.

(179) Woodwork, cardboard boxes.

Normale School, Lierre.

(180) Wood and wirework; study of projections.

MEANS OF IMPROVEMENT.

§ 1.—Quarterly Conferences.

(181-186) Papers, &c., relating to this subject.

§ 2.—Short Courses for Teachers.

(Held during the long vacations and lasting about a month.) (187) Instruction in Gymnastics. (188) Instruction in Drawing. (189) Instruction in the elements of the Natural Sciences. (190) Instruction in the elements of Agriculture. (191) Fröbel System. Training of Governesses. (192) Documents relating to Short Course. (193) Collection of Works on Teaching, principally for the use of the instructor.

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SECTION II.—EDUCATION.

A

CATALOGUE

OF

MANUFACTURES, DECORATIONS, AND DESIGNS,

THE WORK OF THE STUDENTS OF THE SCHOOLS OF ART IN GREAT BRITAIN AND IRELAND, IN CONNECTION WITH THE SCIENCE AND ART DEPARTMENT, SOUTH KENSINGTON.

WITH AN INTRODUCTION

BY GEORGE WALLIS, F.S.A.,

KEEPER OF THE ART COLLECTIONS, SOUTH KENSINGTON MUSEUM.

MINUTE OF THE RIGHT HONOURABLE THE LORDS OF THE COMMITTEE OF HER MAJESTY'S MOST HONOURABLE PRIVY COUNCIL ON EDUCATION.

Lord President, LORD CARLINGFORD, K.P.
Vice President, Rt. Hon. A. J. MUNDELLA, M.P.
Secretary, Col. Donnelly, R.E.

EXHIBITION TO ILLUSTRATE THE OPERATIONS AND INFLUENCE OF SCHOOLS OF ART.

School Studies.

Works of Ornamental and Decorative Art produced from Designs by Students in Schools of Art.

Works of Ornamental and Decorative Art, Woodcuts, Lithographs, and Etchings designed or executed by those who have been Students in Schools of Art.

1. My Lords consider that it will be of advantage to the Art Education of the country if an Exhibition of Works of Art Manufacture, designed and executed by Students of Schools of Art, be held during the present year, in connection with and forming part of the International Exhibition at South Kensington.

2. The works will consist of Carvings in all materials, Furniture, Decorations, Metal working of all kinds, Jewellery, Goldsmiths' work, Pottery, Glass, Woven and Printed Fabrics, &c.

3. All articles exhibited must be the work of past or present Students of Schools of Art, or executed from designs by such Students, the works themselves having been executed since the year 1862. The articles must be certified by the manufacturers, by the Master of the School of Art in which the Student has received instruction, or by the Student himself. The name of the Manufacturer, of the School of Art, and of the Student will be published.

4. The decision as to the acceptance of any work for exhibition will rest entirely with the Committee of Selection.

5. The works must be sent to the Department on or before 31st March. They must be addressed to the Secretary and accompanied by a note (written

only on the first and third pages) describing them as they are meant to be inserted in the Catalogue. The note should also state the names of the Manufacturers, the Designers, and the Artizans; the names of the Schools of Art attended by any of them; and the periods for which they attended. The prices of each article may be given if it be desired.

6. Every possible care will be taken of the works sent for exhibition, but the responsibility for loss or damage in transit and during the period of the Exhibition will rest with the Exhibitor.

SCIENCE AND ART DEPARTMENT,
SOUTH KENSINGTON,
31*st December*, 1883.

CIRCULAR LETTER TO SCHOOLS OF ART.

EXHIBITION TO ILLUSTRATE THE OPERATIONS AND INFLUENCE OF SCHOOLS OF ART.

SIR,

I am directed to request your attention to the enclosed announcement of the intention of My Lords to organize a Special Exhibition of Works of Ornamental and Decorative Art designed and executed by Students of Schools of Art, or executed from designs by Students, to be held in connection with the International Exhibition which will be opened in May next.

A similar Special Exhibition was held in the South Kensington Museum in 1858, and the evidence then produced of the effect of the instruction imparted in the Schools on some of the more important branches of industrial art was of a very satisfactory character, and My Lords consider that it will be to the advantage of the future action of the Schools that such an exhibition should be held in 1884.

In order to make the illustration of the results of the instruction imparted in Schools of Art as complete and successful as possible, the earnest co-operation of the Committees and Masters is essential, and I am instructed to request that you will bring the matter before your Committee at as early a date as possible, and also that you will obtain all the information in your power as to works which have been manufactured from designs by Students, or executed by them, within the period named in the Circular, viz., since the year 1862, and supply this Department with lists of such manufactures and students, with a brief statement of the articles so produced.

The regulations for sending the various objects, and for their receipt by the Department, with all necessary information respecting transmission, will be forwarded to you in due course on receipt of the information now asked for as preliminary.

As this Exhibition will form an integral part of the Health and Education International Exhibition, the works exhibited will be eligible for consideration by the Juries, and such examples as may be found of sufficient excellence in design and manufacture may be distinguished by the award of medals, &c.

I am, Sir,
Your obedient Servant,
J. F. D. DONNELLY,
Colonel R.E., Secretary.

January, 1884.

INTRODUCTION TO THE CATALOGUE.

THE practical results of the instruction imparted in the Schools of Art now so generally established throughout Great Britain and Ireland, and in the subsidiary art classes in connection with them, cannot fail to be interesting to all who care for national progress in matters of taste; and who desire to enquire how far these institutions are fitting our manufacturers and art workmen to meet the competition of foreign rivals in the markets of the world.

The position of these schools in their relation to manufactures, was fairly illustrated, in spite of the obvious difficulties of the task, by an exhibition of works of art, manufactured, designed or executed by students of the schools, in the summer of 1858, held in the then temporary galleries of the South Kensington Museum. The operations and results of 24 schools were shown on that occasion; this having been the first attempt to illustrate the practical value of the instruction imparted since the foundation of those institutions in 1837.

More than a quarter of a century has elapsed since this effort was made to demonstrate the importance of the work which had fallen into the hands of the Science and Art Department, and to impress the public mind with the primary purpose of these schools. It has therefore appeared expedient to take advantage of the present opportunity to show some of the results of the Technical Teaching in Art Schools, as well as to ascertain as fully as possible the true position of affairs, in order that the workers of the future may have the benefit, at least, of knowing distinctly what were the real shortcomings of the past. The operations of 78 Schools of Art or Art Classes are more or less illustrated on this occasion, but it must be remembered that of the 177 Schools now existing a considerable number are in towns having no special Art Industry, and have been there established with a view to general Art Education, and as a means of stimulating a demand for a higher class of design as applied to objects of domestic use.

Undoubtedly the short period of time allowed for organising the Exhibition has been a drawback in many ways, inasmuch as it not only gave no opportunity for special preparation, but inconveniently limited the time for getting together such existing illustrations as could legitimately come within the range of the period fixed upon, that is, since 1862, the date of the last great International Exhibition in London. On the other hand, the limited time allowed for collect-

ing the illustrations had its advantages in insuring that the works had been produced in the ordinary course of instruction, so far as the schools were concerned, and that the articles of manufacture were only those which had been supplied in the ordinary course of trade, and might thus be considered to fairly represent the current products of the day, as influenced by the schools.

It is, however, very questionable if in every instance the best productions have been shown, owing to the hesitation on the part of many manufacturers to give the full credit properly due to the designer. This hesitation is at once unwise and unfair. The unwisdom is shown in the determination on the part of employers or managers to alter designs in accordance with some workshop tradition or supposed adaptation to the market. This is frequently evident enough to the educated ornamentist, inasmuch as he sees that the incongruity of some detail with the original style of the design is such as no educated student of ornament would for a moment tolerate, but is perpetrated with the greatest self-confidence by the traditional deviser in order to meet what he believes to be the exigencies of the mode of manufacture and the demands of the market. The first is of course paramount, but in many instances alteration is not needed, and the change is not an improvement but an impertinence. The second is based entirely upon an assumption of a knowledge of public demand, and is sought to be justified by the subsequent sale the article has met with, not so much because the consumer really admired the design, but because he must take it or get nothing.

The success of Schools of Art in relation to their original and primary purpose has been most seriously interfered with by this suppression of the designer, the want of that public recognition of his position as an artist which exists in France, Germany, and Belgium, almost invariably driving the ablest and most original into the practice of pictorial and sculptural art, and inducing a public opinion in the schools themselves that if a student is to rise he should rather avoid the study of ornament than seek to make himself master of it, since the result will only be to make him the not overpaid, but the very subordinate servant of the manufacturer, or the caterer to the markets for decorative works. Thus it is that students frequently only tolerate the study of ornamental design rather than enter into its varied phases with scholar-like aptitude, enjoying, as the best ornamentists of the past have always done, its infinite adaptation to the refinement of every-day life, and the production of works of elegance and beauty for the home and the fireside.

It is no uncommon thing to find students who give great promise of excellence in this direction declaring that they would have gone on with their practice of ornamental design if they could have been properly appreciated and fairly remunerated; but, above all, have been free from the dictation of those who really had no knowledge of the principles of decorative art, and whose only notions of style and beauty arose out of a foregone conclusion of what would *sell*.

The result has been that whilst many resorted to pictorial art and teaching, others have gone abroad, chiefly to the United States, others to Canada and the Australian Colonies. The Chief Medallist of the United States Mint at Philadelphia, Mr. George Morgan, who contributes to this Exhibition, and the Managing

Director of the Gorham Silver Plate Manufacturing Company, Providence, Rhode Island, Mr. George Wilkinson, were both former students of the Birmingham School of Art. The latter, an able designer and die sinker for silver plate, was dissatisfied with the work he was called upon to execute in this country. A more recent case may be quoted. Mr. John Watkins entered the Birmingham School some years ago, a comparatively poor boy, having to work his own way as best he might. He distinguished himself, and ultimately came to the South Kensington Schools as a national scholar (1873 to 1875). Here he devoted himself to ornamental design so successfully, that in 1878 a design he had executed for a shield, which obtained the prize of £50 from the Goldsmiths' Company, was purchased for £50 by the Department, on the recommendation of Mr. E. J. Poynter, R.A., then Art Director; and subsequently Messrs. Elkington & Co., obtaining the loan of the work, decided to execute it in silver. Both design and unfinished shield are shown in this Exhibition. For some time before going to Paris, Mr. Watkins was employed by the proprietors of "*L'Art*," to make drawings for that publication, and subsequently, after his removal to Paris, to design titles and other decorative details for that journal and other works. Recently, a commission was offered to Mr. Watkins, to execute certain decorative designs in the Science and Art Department. It is best to give his reply in his own words.

"Paris, *April* 4, 1884.

"I should have been glad to undertake the commission at an earlier period, but have now entered on a new course of study, quite different to anything I have ever done before, and entirely at my own expense. I find that it demands my whole attention, and that any return to decoration would be very prejudicial to my progress.

"I have relinquished ornamental art, and would rather be excused from undertaking the design."

This is a clear and distinct illustration of the want of timely encouragement on the part of those for whose assistance students have been trained in our Schools of Art to the practice of ornamental design. Instances, though of a less marked character, are constantly occurring. Complaints have been made by past students, invited to contribute to this Exhibition, of the interference of Trades Unions with their employment as decorators, and the consequent necessity for their falling back on pictorial art, as copyists, &c.

Can it be wondered at, then, that students do not enter freely upon a course of study, if it only yields such results?

If the Technical Colleges and Schools now so energetically advocated are to result in an equal ignoring of the men trained therein, because the science they would bring to bear upon industry is not in conformity with the foregone conclusions of manufacturers, managers, foremen and trades unions, these institutions will only prove to be training grounds for the future assistants of our foreign rivals, who will appreciate that knowledge which our own people do not care to make use of.

Happily there is an aspect of this question which, forming an exception,

also proves the rule. Whenever the sons of manufacturers have availed themselves earnestly of the instruction given in these Schools of Art, or when students have afterwards become manufacturers and managers, and have been true to their training, they have invariably improved the designs of the industry they have engaged in, and in spite of the buyer for the market and the salesman, carried these improvements before the public.

Again, when the manufacturer has resolved to use the school as the handmaid of the workshop, and to utilise the ability developed in its teaching, the results have invariably been of a satisfactory character, alike to manufacturer, student, and the public. No better evidence of this can be afforded than in the remarkable rise and progress of the well-known Doulton ware: beginning, little more than fifteen years ago, by the employment of the students of the Lambeth School of Art. This has grown into a successful art industry, belonging more to the present certainly than to the past, asserting itself for its own day and the wants of our own time.

Nottingham, again, is another illustration of the wise use of the School of Art to a comparatively new industry, that of furniture lace. Here the ingenious machinery applicable to the production of those fabrics is made subservient to the designer, by giving him perfect mastery over the means at his disposal; and even if it modifies, and to a certain extent possibly limits the elaboration of his forms, it yet exercises a restraining power which is more healthy than otherwise, preventing the almost licentious use of the loom in the production of designs utterly inconsistent alike with the material in which the fabric is produced and the use to which it is to be devoted.

The honourable position attained by Singer's Art Workshops at Frome may also be cited as an instance of success largely due to the benefits derived from the art teaching of the department, two of the junior members of the firm having been trained at South Kensington, and its subordinate workers being prepared by receiving instruction in a School of Art at Frome, which has grown up with the manufactory.

Letheren's Art Manufactory and Construction Iron Works, Cheltenham, is another example of the same kind.

It is to be regretted that some important centres of art manufacture are not by any means adequately represented in this Exhibition. In some instances manufacturers were willing to acknowledge the value of the instruction imparted in the Schools of Art in the education of their designers, but hesitated to allow the names of the designers to appear in this illustration of the action of the schools. It must, however, be perfectly clear that the Department of Science and Art could not consent to the suppression of the names of the designers in a collective illustration of the operations and influence of the schools. The Exhibition must of necessity be a students' and designers' Exhibition, and not a manufacturers', although it was gratifying to find that some manufacturers heartily concurred in taking this opportunity for encouraging native design. It was therefore better for the integrity of the demonstration that when the names of the designers could not be given, no exhibition of results should take place.

One very satisfactory feature of this Exhibition, as a contrast to that of 1858, is the readiness with which former students, who have taken positions which render them independent of the manufacturer, have come forward to prove their capacity, and to show that they appreciate their former connection with the schools. In 1858 this candour was by no means general, and indeed the manufacturer then rather exceeded the designer in readiness to exhibit.

Those manufacturers who have come forward on this occasion have done so in a genuine and liberal spirit, seeking to give credit to those to whom credit is due.

One fact may be unhesitatingly recorded. It is that at least eighty per cent. of the objects of industrial art here exhibited would have been impossible of production, thirty or even twenty-five years ago, for the very best possible reasons; the men who made the designs were uneducated for the purpose, as the workmen to carry out the designs when made, would have been difficult to find; and the probability is that the manufacturer would not have dared to produce them, without the permission of his dictator, the buyer or salesman, who of course would not believe they would *sell*.

It may be readily granted that concurrent forces were at work in the efforts of individuals seeking to influence public taste, and thus to create a demand in a higher direction; but even they had to take advantage of the elementary training gained in the schools, and certainly they were not free from the influences around them, either for better or worse.

If, however, any one supposes that this Exhibition is a full and complete illustration of all that has been done by and through Schools of Art since 1862, he forgets what has been going on throughout the whole country. After all, it simply shows little more than the outer margin of the ground which has been more or less covered.

As a matter of course the influence of the schools upon the thousands of workmen who have gone through the classes during the period from the extension of the schools to the provinces, say 1843-4, to the present time, cannot be in any way fully illustrated. The improvement of handicraft through the study of the elements of drawing alone, has been proved over and over again to those coming in contact with workmen who had availed themselves of the instruction; the proof being seen in the work done—an utterly unappreciated phase of the action of the schools.

The influence of the Central Museum at South Kensington, which has been recognised all over Europe, can scarcely have been inoperative in Great Britain. The public has had the opportunity of studying fine works of art, bought because they were fine, not from any fancied adaptation to this or that means of imitation; thus making industrial capital out of them. Taste has been raised by the sight of such objects and a feeling gradually created which demands something of a higher order than had been supplied before, and the producer finds himself face to face with an advancing knowledge and discovers that there is a market for objects appealing to an art perception higher than that to which he had been before called upon to minister, to which he himself has hitherto been a stranger. The branches of the Museum, and the many allied

institutions to which from time to time it has circulated collections on loan have widened and strengthened this influence.

The question of the artizan and art workman has, however, a good deal to do with this matter. What was the argument of the manufacturer prior to the establishment of these schools, and for some years after, until their influences began to be felt? It was, that even if we got good designs, they were spoiled by the want of art-skill in the workman in carrying them out! This was the origin of the demand for skilled Frenchmen who could not only design, but realise their own designs—Emile Jeannest, Protat, Carrier, Willms, and others.

The change in this point is in itself an illustration. Even twenty-five years ago it was no uncommon thing with those actively at work in the schools to find workmen who had passed through them complain of the designs which they were compelled to execute, because the exigencies of the market necessitated their production. Later on, those who took the trouble to converse with art workmen on the character of designs they were producing, might be shocked, but not much astonished, at the strong language with which they denounced the *things* in hand. The fact is that the intelligent art workman, who from boyhood to early manhood has studied in these Schools of Art, is far in advance of the employer, in point of critical acumen and art knowledge, to say nothing of the manager or foreman, whose notions he has to tolerate; or of that conventional arbiter of public taste, the man who only buys an object to *sell*, and of course *makes it sell*, however objectionable it may be to the educated taste of the consumer.

One feature of the view which the seller adopts is shown in the fact that the best designs in textile fabrics are frequently offered as French. Specimens in this Exhibition have been labelled "French" in the shop windows, and attempts have been made to obtain the withdrawal of examples exhibited, because the seller objected to the real origin of the design and fabric being made known to the public.

Those who can look back to the state of the arts of design as applied to the various industries illustrated, say a quarter of a century ago, to say nothing of the period at which Schools of Design were first founded, cannot fail to see that the progress has been enormous. This is the only true test of the results, and not the mere comparison with what has been growing up before our eyes from year to year, influenced by the Schools and their teaching. Those who cannot go back thus far, and therefore have no means of comparison, may be none the worse for being reminded that the standard according to which they form their opinions now, and in reliance on which they very legitimately, as they think, sit in judgment, is the absolute product of the very progress in the arts which some of them fancy themselves privileged to deny.

The assumption that the course pursued has been wrong, is simply an assumption without proof. That the course has been perfect, or in any way complete, possibly no one will maintain. But when honestly, earnestly, and energetically worked out, it has done more than any system existing at this moment in Europe, and the best witnesses in its favour are our

Continental neighbours themselves, who seek, with some modifications, no doubt, to adapt it to their own wants.

Finally, it may be well to record the fact, that the early promoters of the Art Education of the people through these schools held very distinctly the opinion, that it would take at least a generation, possibly nearer two, before any very marked results could possibly arise, and that, moreover, without taking into account the apathy and opposition which subsequently arose from the impatience of some, and the self-satisfaction of others.

In all the contributions to the Exhibition the greatest care has been taken to have evidence of the connection of the exhibitor with the school or schools in which he or she studied; and, when necessary, to require a certificate that the work is that of the student in whose name it is exhibited, together with a record of the period or periods at which attendance was given in the school.

May, 1884. GEORGE WALLIS.

CLASSIFICATION

OF THE

EXHIBITION TO ILLUSTRATE THE OPERATIONS AND INFLUENCE OF SCHOOLS OF ART.

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CATALOGUE

DIVISION II.—EDUCATION.

SECTION I.

School Studies in Stages of Instruction. Designs and Models executed by the Students of the Schools.

[*The latter are classed with the section to which they belong.*]

1. Five School Studies. *Stages* 1 C, 1 D, 1 E, 2 B, 3 B.
By James Clarke, *South Kensington.*

2. Geometrical Studies. *Stage* 1 A.
By H. G. Massey, *South Kensington.*

3. Architectural Studies. *Stage* 1 D.
By Miss M. A. Heath, *Gloucester.*

4. Study in Sepia. *Stage* 5 A.
By H. G. Massey, *South Kensington.*

5. Study in Chalk from the Cast. *Stage* 5 B.
By A. Palmer, *York.*

6. Study in Chalk from the Cast. *Stage* 5 B.
By James Clarke, *South Kensington.*

7. Study in Chalk from the Cast. *Stage* 4 B.
By Miss Mary C. Lock, *Dorchester.*

8. Study in Chalk from Life. *Stage* 8 C.
By A. E. Pearce, *Lambeth.*

9. Study from the Cast in Chalk. *Stage* 8 B^2.
By W. A. Mulligan, *South Kensington.*

10. Study in Chalk from the Cast. *Stage* 8 B^2.
By Miss Florence Reason, *Bloomsbury.*

11. Study in Chalk from Life. *Stage* 8 C^1.
By Miss C. M. D. Hammond, *Lambeth.*

12. Study in Chalk from the Cast. *Stage* 8 B^2.
By George Bathgate, *Edinburgh.*

13. Study in Chalk from the Cast. *Stage* 8 B^2.
By Miss Florence Reason, *Bloomsbury.*

14. Sketch in Chalk. *Stage* 23 D.
By Alfred Hitchins, *South Kensington.*

15. Study in Chalk from Life. *Stage* 8 C^2.
By Miss Edith Savill, *Lambeth.*

16. Two Anatomical Studies. *Stage* 9 A.
By George Morton, *South Kensington.*

17. Two School Sketches. *Stage* 23 D.
By Miss Agnes Webster, *South Kensington.*

18. Chalk Study from the Life. *Stage* 8 C^1.
By A. E. Pearce, *Lambeth.*

19. Study from the Cast in Sepia. *Stage* 16 A.
By W. H. Webb, *West London.*

20. Outline Study from Nature. *Stage* 10 A.
By J. J. Trego, *Coventry.*

21. Outline Study from Nature. *Stage* 10 A.
By J. Gardner, *Coventry.*

22. Study of Flowers in Water Colours. *Stage* 13 A.
By Miss A. M. Bailey, *South Kensington.*

23. Pencil Study from Nature. *Stage* 10 B.
By G. W. Rhead, *South Kensington.*

24. Water Colour Study from Nature. *Stage* 14 A.
By W. P. Watson, *South Kensington.*

25. Water Colour Study from Nature. *Stage* 14 A.
By Miss Jessie Betts, *Weymouth.*

26. Flower Studies from Nature. *Stage* 14 A.
By H. J. Whiteside, *Birkenhead.*

27. Water Colour Studies of Flowers. *Stage.* 14 A.
By Miss Laura Dawe, *Plymouth.*

28. Water Colour Study from Nature. *Stage* 14 A.
By C. T. Howard, *Boston.*

29. Study of Flowers in Tempera. *Stage* 14 A.
By Miss RosaWallis, *South Kensington.*

30. Study in Oil from Nature. *Stage* 14 A.
By A. Fisher, *Torquay.*

31. Study in Monochrome. *Stage* 12 A.
By W. P. Watson, *South Kensington.*

32. Water-colour Group. *Stage* 15 B.
By Miss E. C. Nisbet, *Bloomsbury.*
(Lent *by* Mrs. Brightwen.)

33. Study of Drapery. *Stage* 15 A.
By E. O. Cooke, *Nottingham.*

34. Landscape (copy) in Oils. *Stage* 13 B.
By W. P. Watson, *South Kensington.*

35. Group in Oils. *Stage* 15 A.
By S. H. Llewellyn, *South Kensington.*

36. Study of Flowers in Oils. *Stage* 15 A.
By Miss Lydia B. King, *Bloomsbury.*

37. Study in Oils (copy). *Stage* 17 A.
By Mrs. Finney. *South Kensington.*

38. Study in Oil (copy). *Stage* 17 A.
By George Morton, *South Kensington.*

39. Study in Oils, Group. *Stage* 15 A.
By George Morton, *South Kensington.*

40. Study in Sepia. *Stage* 16 B^1.
By E. S. Heise, *Birkenhead.*

41. Group in Oils. *Stage* 15 A.
By E. O. Cooke, *Nottingham.*

42. Group in Oils. *Stage* 15 A.
By Miss E. Slater, *Gloucester.*

43. Study in Oils from Life. *Stage* 17 B.
By Miss A. Parnell, *Dublin.*

44. Study in Oils from life. *Stage* 17 B.
By George Hare, *South Kensington.*

45. Study in Water Colour from Life *Stage* 17 C.
By A. G. Morrow, *South Kensington.*

46. Group in Monochrome. *Stage* 15 C.
By G. Homan, *West London.*

47. Study in Oils from Life. *Stage* 17 B.
By George Hare, *South Kensington.*

48. Study in Oils from Life. *Stage* 17 B.
By Miss Evans, *South Kensington.*

49. Four Life Studies in Oil. *Stage* 3–17 B and 1–17 C.
By Alfred Hitchins, *South Kensington.*

50. Two Studies in Chalk, monthly competition.
By A. G. Morrow, *South Kensington.*

51. Study from Life in Water Colour. *Stage* 17 B.
By Miss F. Reason, *Bloomsbury.*
(Lent by the Duchess of Edinburgh.)

52. Study of Flowers in Oils. *Stage* 15 A.
By Miss Isabel Hancock, *Bloomsbury.*
(Lent by the Duchess of Edinburgh.)

53. Study of Fruit in Water Colours. *Stage* 14 A.
By E. L. Varley, *Bloomsbury.*

54. Study of Stop and Safety Valves. *Stage* 23 A.
By J. H. Robertson, *Dundee.*

55. Study of Stop and Safety Valves. *Stage* 23 A.
By Wm. Adamson, *Dundee.*

56. Two Studies of 70-ton Crane. *Stage* 23 A.
By Robert Witts, *Dundee.*

57. Study of the High Girders, Tay Bridge. *Stage* 23 A.
By J. McInroy, *Dundee.*

58. Sixteen Frames, containing Time designs worked out in six or eight hours by Students, as follows:—

Painted Wall Tiles.
By Misses E. Small, M. Butterton, E. Lupton, and Mr. G. H. Tabor, *Lambeth.*

Table Top, inlaid.
By P. Hall, J. O. Poole, G. Ward, and W. F. White, *South Kensington.*

Silver Vase.
By J. Bradburn, J. Gater, and H. Tomlins, *South Kensington.*

Silver Cup.
By C. Dodd, W. Mulligan, H. Rider, and J. Ward, *South Kensington.*

Earthenware Vase.
By F. Abrahams, G. Henney, and H. Tomlins, *South Kensington.*

Wrought-iron Grill.
By J. Bradburn, J. Gater, G. Henney, and F. Leighton, *South Kensington.*

Clock Case.
By P. Hall, J. Poole, J. Ward, and W. White, *South Kensington.*

Brussels Carpet.
By J. Bradburn, F. Penson, R. Rhodes, and H. Tomlins, *South Kensington.*

Terra Cotta Columns.
By G. Bradburn, J. Henney, and R. Rhodes, *South Kensington.*

Various Designs.
By F. Leighton, G. Henney, and J. Bradburn, *South Kensington.*

59. Illustrations for a method of Studies in Water Colours. 1881. *Stage* 15 B.
By F. Suddars, *Bradford.* Age 16.

60. Study of Still Life in Water Colours, based on the above. 1881. *Stage* 15 B.
By F. Suddars, *Bradford.* Age 16.

61. Drawing in Tempera. *Stage* 14 A.
By W. W. Morrison, *South Kensington.*

62. Study of Palm. *Stage* 14 A.
By C. Humphries, *South Kensington.*

63. Study in Tempera. *Stage* 14 A.
By E. A. Slocombe, *South Kensington.*

SECTION II.

Ceramic Manufactures, Porcelain, Earthenware, Stoneware, Terra Cotta, &c.

EXHIBITED BY MESSRS. DOULTON, LAMBETH, AS A COLLECTIVE ILLUSTRATION OF THE INFLUENCE OF THE LAMBETH SCHOOL OF ART.

A central pavilion with four stands around. The pavilion is in the form of a dome and tympanum 30 ft. high and 30 ft. square, supported on Doulton ware columns backed by wood pilasters. The roof is of parti-coloured glazed tiles with ribs of Doulton ware, and bulls' eyes in each alternate division. The dome rests upon a cornice carried on 16 pilasters, between which are panels of pottery, mosaic, and painted glass alternating. The lower part forms a square with four entrances, over which are Doulton arches, and between which are large hand-painted subject tiles, arranged four on each side, representing:—

Science, Commerce, Western Art, Eastern Art.
Old Lambeth, New Lambeth, The Bishop's Palace, High Street.
Throwing, Lathing, Tile Making, Kiln Work.
Palissy, Della Robbia, Wedgwood, Shonsui of Tse.

The interior of dome is of special construction, being of semi-circular arches intersecting each other, the spaces thus formed being filled in with faience tiles, divided by ribs of Doulton ware, and a gallery of Doulton ware balusters above. Within the pavilion are exhibited mantel-pieces, and patented fire-places of pottery with art ware, &c., representing: *Drawing-room, Dining-room, Boudoir and Study.* The stands around are placed at each corner of the space occupied, and are also ornamented with Doulton ware and faience, the front being an open arcade with balusters. In these stands are exhibited: *Bath Room complete, Open and Close Stoves, Filters and General Stoneware, Queen's ware, Brass work, and Sanitary Appliances in action.*

The following are the names of some of the artists engaged in the work, nearly all of them having been students of the Lambeth School of Art:—

Constructional design and details . . .	A. E. Pearce.
Stained glass . . .	do.
Mosaic panels. . .	do.
Doulton columns . .	A. E. Pearce and F. A. Butler.
Doulton balusters and Modelling . . .	J. Broad.
Doulton Caps and Friezes	H. Ellis.

Faience tile panels designed by J. Eyre.

The following have also taken part in the execution of various portions of the work;—

J. W. Nunn.	Miss E. Lewis.
Cruickshank.	Miss E. Roberts.
J. H. McLellan.	Miss Vargas.

together with about 120 others who likewise assisted in carrying out the details.

64. Vase, dark blue ground, yellow flowers.
Designed by Miss Margaret Challis, *Lambeth.*
Manufactured by Messrs. Doulton.

65. Vase, brown, ornamented with flowers.
Designed by Miss Louisa Davis, *Lambeth.*
Manufactured by Messrs. Doulton.

66. Vase, light green ground, and ornamented with scroll pattern and figure.
Designed by Jas. R. Cruikshank, *Lambeth.*
Manufactured by Messrs. Doulton.

67. Vase, silicon ware.
Designed by Miss Eliza Simmance, *Lambeth.*
Manufactured by Messrs. Doulton.

68. Vase, floral decoration, with birds on green ground.
Designed by Miss Isabel Lewis, *Lambeth.*
Manufactured by Messrs. Doulton.

69. Small Vase.
Designed by U. A. Larcher, *Lambeth.*
Mauufactured by Messrs. Doulton.

70. Vase, salt glaze.
Designed by Miss Ada Dennis, *Lambeth.*
Manufactured by Messrs. Doulton.

71. Small Vase for Flowers
Designed by Miss Emma Roberts, *Lambeth.*
Manufactured by Messrs. Doulton.

72. Bowl, decorated silicon.
Designed by Miss Edith H. Ball, *Lambeth.*
Manufactured by Messrs. Doulton.

73. Vase, floral ornament, parcel gilt.
Designed by Miss B. M. Durtnall, *Lambeth.*
Manufactured by Messrs. Doulton.

74. Vase, Champlevé ware.
Designed by Miss Edith M. Coleman, *Lambeth.*
Manufactured by Messrs. Doulton.

75. Bowl, Champlevé ware.
Designed by Miss A. Horne, *Lambeth.*
Manufactured by Messrs. Doulton.

76. Vase, floral decoration.
Designed by Miss Fanny Elliott, *Lambeth.*
Manufactured by Messrs. Doulton.

77. Vase, floral ornament.
Designed by Miss K. B. Smallfield, *Lambeth.*
Manufactured by Messrs. Doulton.

78. Bowl, stone ware.
Designed by Miss L. Wakely, *Lambeth.*
Manufactured by Messrs. Doulton.

79. Small Vase, salt glaze.
Designed by Miss Elizabeth French, *Lambeth.*
Manufactured by Messrs. Doulton

80. Jug, parcel gilt.
Designed by Miss A. Campbell, *Lambeth.*
Manufactured by Messrs. Doulton.

81. Vase, grey silicon ware.
Designed by Miss L. Stuart, *Lambeth.*
Manufactured by Messrs. Doulton.

82. Flower Vase, stone ware.
Designed by Miss E. A. London, *Lambeth.*
Manufactured by Messrs. Doulton.

83. Vase, Champlevé ware.
Designed by Miss A. M. Barker, *Lambeth.*
Manufactured by Messrs. Doulton.

84. Decorated Plaque.
Designed by Walter Nunn, *Lambeth.*
Manufactured by Messrs. Doulton.

85. Vase, Champlevé ware.
Designed by Miss E. Chandler, *Lambeth.*
Manufactured by Messrs. Doulton.

86. Bottle, Champlevé ware.
Designed by Miss Alice Eckenstein, *Lambeth.*
Manufactured by Messrs. Doulton.

87. Vase, Champlevé ware.
Designed by Miss A. Herapath, *Lambeth.*
Manufactured by Messrs. Doulton.

88. Vase.
Designed by Miss Mary Capes, *Lambeth.*
Manufactured by Messrs. Doulton.

89. Flower Pot, salt glaze stone ware.
Designed by Miss Martha M. Rogers, *Lambeth.*
Manufactured by Messrs. Doulton.

90. Vase, Champlevé ware.
Designed by Miss M. Canty, *Lambeth.*
Manufactured by Messrs. Doulton.

91. Vase, salt glaze, stone ware.
Designed by E. L. Rumble, *Lambeth.*
Manufactured by Messrs. Doulton.

92. Green Vase, floral ornament.
Designed by Miss Mary Capes, *Lambeth.*
Manufactured by Messrs. Doulton.

93. Flower Vase.
Designed by Miss E. A. Forsey, *Lambeth.*
Manufactured by Messrs. Doulton.

94. Jug, stone ware.
Designed by Miss B. J. Youatt, *Lambeth.*
Manufactured by Messrs. Doulton.

95. Vase, Champlevé ware.
Designed by Miss Jessie Gandy, *Lambeth.*
Manufactured by Messrs. Doulton.

96. Vase, green ground with floral decoration.
Designed by Miss Florence Lewis, *Lambeth.*
Manufactured by Messrs. Doulton.

97. Vase, with floral decoration.
Designed by Miss A. L. Green, *Lambeth.*
Manufactured by Messrs. Doulton.

98. Vase, salt glaze stone ware.
With Etchings by Miss Barlow, *Lambeth.*
Manufactured by Messrs. Doulton.

99. Vase, salt glaze ware.
Designed by Miss A. L. Burlton, *Lambeth.*
Manufactured by Messrs. Doulton.

100. Vase, floral ornament.
Designed by Miss Florence Lewis, *Lambeth.*
Manufactured by Messrs. Doulton.

101. Vase, Champlevé ware.
Designed by Miss Florence C. Roberts, *Lambeth.*
Manufactured by Messrs. Doulton.

102. Flower Bowl.
Designed by Miss Mina Crawley, *Lambeth.*
Manufactured by Messrs. Doulton.

103. Bowl, salt glaze.
Designed by Miss L. E. Edwards, *Lambeth.*
Manufactured by Messrs. Doulton.

104. Bowl, floral decoration.
Designed by Miss Matilda S. Adams, *Lambeth.*
Manufactured by Messrs. Doulton.

105. Bottle, salt glaze.
Designed by Miss Clara S. Barker, *Lambeth.*
Manufactured by Messrs. Doulton.

106. Vase.
Designed by Miss A. Beck, *Lambeth.*
Manufactured by Messrs. Doulton.

107. Plaque.
Designed by Miss Kate Sturgeon, *Lambeth.*
Manufactured by Messrs. Doulton.

108. Vase, stone ware.
Designed by Miss H. E. Lee, *Lambeth.*
Manufactured by Messrs. Doulton.

109. Vase, stone ware.
Designed by Miss Gathercole, *Lambeth.*
Manufactured by Messrs. Doulton.

110. Bottle.
Designed by Miss L. Waters, *Lambeth.*
Manufactured by Messrs. Doulton.

111. Flower Bowl, Champlevé ware.
Designed by Miss E. Rogers, *Lambeth.*
Manufactured by Messrs. Doulton.

112. Vase, stone ware.
Designed by Miss Ellen Garbett, *Lambeth.*
Manufactured by Messrs. Doulton.

113. Vase, light brown ground with Cupids.
Designed by Miss I. M. Rogers, *Lambeth.*
Manufactured by Messrs. Doulton.

114. Vase, stone ware.
Designed by Miss E. Rumbol, *Lambeth.*
Manufactured by Messrs. Doulton.

115. Vase, Impasto ware.
Designed by Miss F. J. Allen, *Lambeth.*
Manufactured by Messrs. Doulton.

116. Vase, Impasto ware.
Designed by Miss Rosa Keen, *Lambeth.*
Manufactured by Messrs. Doulton.

117. Vase, salt glaze stone ware.
Designed by Miss J. Newnham, *Lambeth.*
Manufactured by Messrs. Doulton.

118. Jar and Cover.
Designed by Miss A. Hays, *Lambeth.*
Manufactured by Messrs. Doulton.

119. Vase, stone ware.
Designed by Miss Mary Davis, *Lambeth.*
Manufactured by Messrs. Doulton.

120. Vase, stone ware.
Designed by Miss Hawkesley, *Lambeth.*
Manufactured by Messrs. Doulton.

121. Biscuit Box, inlaid ware.
Designed by Miss B. Evans, *Lambeth.*
Manufactured by Messrs. Doulton.

122. Vase, stone ware.
Designed by Miss M. Aitken, *Lambeth.*
Manufactured by Messrs. Doulton.

123. Vase, salt glaze.
Etchings by Miss Barlow, *Lambeth.*
Manufactured by Messrs. Doulton.

124. Flower Pot.
Designed by Miss A. E. Budden, *Lambeth.*
Manufactured by Messrs. Doulton.

125. Vase.
Designed by Miss E. F. Bowen, *Lambeth.*
Manufactured by Messrs. Doulton.

126. Jar and Cover.
Designed by Miss Isabella Miller, *Lambeth.*
Manufactured by Messrs. Doulton.

127. Small Vase.
Designed by Miss Catherine Hughes, *Lambeth.*
Manufactured by Messrs. Doulton.

128. Mug.
Designed by M. G. Thompson, *Lambeth.*
Manufactured by Messrs. Doulton.

129. Ewer, salt glaze.
Designed by Miss Elizabeth Fisher, *Lambeth.*
Manufactured by Messrs. Doulton.

130. Vase.
Designed by Miss Mary Butters, *Lambeth.*
Manufactured by Messrs. Doulton.

131. Vase, Champlevé ware.
Designed by Miss Alice Groome, *Lambeth.*
Manufactured by Messrs. Doulton.

132. Vase, Impasto ware.
Designed by Miss Lizzie Haughton, *Lambeth.*
Manufactured by Messrs. Doulton.

133. Vase, stone ware.
Designed by Miss Sarah Mary Harey, *Lambeth.*
Manufactured by Messrs. Doulton.

134. Vase.
Designed by Miss Elizabeth Emerton, *Lambeth.*
Manufactured by Messrs. Doulton.

135. Vase, Repoussé ware.
Designed by William Parker, *Lambeth.*
Manufactured by Messrs. Doulton.

136. Pot, clay, with fishes worked with two coloured clays, and glazed.
Designed by William Baron, *Lambeth.*
Manufactured by Messrs. Doulton.

137. Ewer, stone ware.
Designed by Miss Elizabeth Hollis, *Lambeth.*
Manufactured by Messrs. Doulton.

138. Vase, floral decoration.
Designed by Miss Gertrude Smith, *Lambeth.*
Manufactured by Messrs. Doulton.

139. Vase.
Designed by Miss Lillian Goldsack, *Lambeth.*
Manufactured by Messrs. Doulton.

140. Vase, Champlevé ware.
Designed by Miss Lulu Durtnall, *Lambeth.*
Manufactured by Messrs. Doulton.

141. Vase, Impasto ware.
Designed by Miss Kate Rogers, *Lambeth.*
Manufactured by Messrs. Doulton.

142. Bowl, with floral ornament, parcel gilt.
Designed by M. Arding, *Lambeth.*
Manufactured by Messrs. Doulton.

143. Vase, salt glaze.
Designed by Miss Frances E. Lee, *Lambeth.*
Manufactured by Messrs. Doulton.

144. Vase, floral decoration.
Designed by Miss Helen A. Arding, *Lambeth.*
Manufactured by Messrs. Doulton.

145. Vase, silicon ware.
Designed by Miss Jessie Hinchliff, *Lambeth.*
Manufactured by Messrs. Doulton.

146. Vase, floral ornament.
Designed by Miss Lizzie Shettleworth, *Lambeth.*
Manufactured by Messrs. Doulton.

147. Flower Pot.
Designed by Miss Florence E. Barlow, *Lambeth.*
Manufactured by Messrs. Doulton.

148. Vase, Champlevé ware.
Designed by Miss Louisa Russell, *Lambeth.*
Manufactured by Messrs. Doulton.

149. Vase, conventional ornament.
Designed by Miss Mary Denley, *Westminster and Lambeth.*
Manufactured by Messrs. Doulton.

150. Vase, stone ware.
Designed by Miss Emily E. Storwer, *Lambeth.*
Manufactured by Messrs. Doulton.

151. Vase, floral ornament.
Designed by Miss Euphania Thatcher, *Lambeth.*
Manufactured by Messrs. Doulton.

152. Vase, stone ware.
Designed by Miss Elizabeth M. Small, *Lambeth.*
Manufactured by Messrs. Doulton.

153. Vase, stone ware.
Designed by Miss Georgina D. Burr *Lambeth.*
Manufactured by Messrs. Doulton.

154. Vase, Florentine decoration.
Designed by Miss Josephine A. Durtnall, *Lambeth.*
Manufactured by Messrs. Doulton.

155. Flower Pot, Champlevé ware.
Designed by A. Miss Lillian Curtis, *Lambeth.*
Manufactured by Messrs. Doulton.

156. Flower Pot, Champlevé ware.
Designed by E. B. Smith, *Lambeth.*
Manufactured by Messrs. Doulton.

157. Bowl.
Designed by Miss Amy Georgina Moore, *Lambeth.*
Manufactured by Messrs. Doulton.

158. Vase, Champlevé ware.
Designed by Miss Edith D. Lupton, *Lambeth.*
Manufactured by Messrs. Doulton.

159. Large Vase, floral decoration.
Designed by Miss Florence Lewis, *Lambeth.*
Manufactured by Messrs. Doulton.

160. Large stone ware Vase.
Designed by Frank Butler, *Lambeth.*
Manufactured by Messrs. Doulton.

161. Large Vase, floral ornament.
Designed by Miss Mary Butterton, *Lambeth.*
Manufactured by Messrs. Doulton.

162. Terra Cotta Panel, "The Sons of Cydippe."
Designed and executed by Geo. Tinworth, *Lambeth.*

163. Terra Cotta Panel, "Meeting of Joseph and Jacob"
Designed and executed by Geo. Tinworth, *Lambeth.*

164. Terra Cotta Group, "Hercules and Antæus."
Designed and executed by Geo. Tinworth, *Lambeth.*

165. Terra Cotta Group, "Football."
Designed and executed by Geo. Tinworth, *Lambeth.*

166. Terra Cotta Panel, "Peter's Denial."
Designed and executed by Geo. Tinworth, *Lambeth.*

167. Terra Cotta Panel, "The Four Lepers."
Designed and executed by Geo. Tinworth, *Lambeth.*

168. Terra Cotta Panel, "Finding of Jesus in the Temple."
Designed and executed by Geo. Tinworth, *Lambeth.*

169. Terra Cotta Panel, "The Tribute Money."
Designed and executed by Geo. Tinworth, *Lambeth.*

170. Terra Cotta Panel, "The Box of Ointment."
Designed and executed by Geo. Tinworth, *Lambeth.*

171. Terra Cotta Panel, "The Slaughter of the Innocents."
Designed and executed by Geo. Tinworth, *Lambeth.*

172. Jardinière, blue and coloured clays.
Designed by Alexander Fisher.
Executed by Torquay Terra Cotta Co.

173. Twelve Specimens of Jugs, Tazzas, Vases, &c.
Designed by Arthur J. Davey.
Executed by The Watcombe Terra Cotta Co., *Torquay.*

174. Dark Red Lustre Majolica Plateau.
Designed by James Gamble, *Sheffield.*
(Lent by H.R.H. The Duke of Edinburgh.)

175. Eight Specimens of Salisbury Pottery.
Designed and manufactured by Ella Jacob, *The Close, Salisbury.*

176. Dessert Plate with pierced border.
Designed, pierced, and coloured by Miss Lucy Worth.
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

177. Large Plate.
Designed by Miss Lucy Worth, *Nottingham.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

178. Six Small Specimens of Linthorpe Ware.
Designed by Miss Worth, *Nottingham.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

179. Nine Specimens of Linthorpe Pottery (8 Vases and 1 Ewer).
Designed by Wm. Patey, *Ryde, Isle of Wight.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

180. Vase, light green.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

181. Pair of Vases.
Designed by Arthur P. Shorter, *Middlesborough.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

182. Pair Vases.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

183. Jug Incised Ornament.
Designed by Francis Scheibner, *Stourbridge.*

184. Plate.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

185. Vase.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

186. Vase, floral decoration, blue ground.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

187. Vase, light brown with fishes, &c.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

188. Salad Bowl, Knife and Fork.
Designed and executed by J. A. Rhodes, *Sheffield.*

189. Plate, floral decoration.
Designed by Sheldon Longbottom, *Darlington.*
Manufactured by Linthorpe Pottery Co., *Middlesborough.*

190. Large Plaque.
Designed by F. Gibbons, *Cirencester.*
Manufactured by W. Allen, *Coalbrookdale.*

191. Yellow Glazed Plaque.
Designed by F. Gibbons, *Cirencester.*
Manufactured by W. Allen, *Coalbrookdale.*

192. Plate.
Designed and manufactured by J. E. A. Brown, *Cirencester.*

193. Vase, olive green.
Vase, brown, incised ornament.
Bottle, olive green.
Vase, blue.
Tazza, yellow, incised ornament.
Large Vase, incised ornament.
Two Plates, incised ornament.
Majolica Fire-place.
Designed by J. B. Fidler, *Sheffield.*
Manufactured by Messrs. Maw & Co., *Coalbrookdale.*

194. Spiral Vase.
Designed and modelled by J. Hadley, *decorated by* J. Callowhill, *Worcester.*
Manufactured by The Royal Porcelain Works, *Worcester.*

195. Nautilus Vase.
Designed and modelled by J. Hadley.
Decorated by J. Callowhill, *Worcester.*
Manufactured by The Royal Porcelain Works, *Worcester.*

196. Renaissance Vase.
Designed and modelled by J. Hadley.
Decorated by J. Callowhill, *Worcester.*
Manufactured by The Royal Porcelain Works, *Worcester.*

197. Vases, Pair of, blue ground, gold ornaments
Designed and executed by James Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

198. Vases, Pair of, decorated with ferns in gold.
Designed and executed by James Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

199. Pair of Vases, decorated with gold.
By James and Sydney Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

200. Four Plates, blue ground, decorated with gold.
By Clarence and Sydney Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

201. Plate, olive green ground, decorated with gold.
Designed and executed by J. Callowhill.
Manufactured by James Callowhill, The Nunnery, *Worcester.*

202. One Dozen Plates, white ground with floral ornaments decorated with gold.
By James Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

203. Plate, white ground.
With etching by James Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

204. Plate, decorated with gold.
By James Callowhill, *Worcester.*
Manufactured by James Callowhill, The Nunnery, *Worcester.*

205. Jardinière. Japanese Ornament.
Designed by David Bates, *Worcester.*
Manufactured by The Royal Porcelain Works, *Worcester.*

206. Shell Vase.
Designed and modelled by T. Hadley.
Manufactured by The Royal Porcelain Works, Worcester.

207 Jardinière floral decoration on white ground
By James Bradley, *Worcester.*
Manufactured by The Royal Porcelain Works, *Worcester.*

208. Pair of Vases, floral decoration.
Designed by A. Tatler, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

209. Pair of Vases.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

210. Pair of Vases.
Designed by John Bratt, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

211. Dessert Plate.
Designed by F. Wood, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

212. Dessert Plate
Designed by A. R. Kelsall, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

213. Dessert Plate,
Designed by William Boardman, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

214. Dessert Plate
Designed by John Bratt, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

215. Dessert Plate.
Designed by Miss Jane Oakes, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

216. Ewer and Basin.
Designed by T. Moorcroft, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

217. Oyster Plate.
Designed by William Wright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

218. Biscuit Box.
Designed by William Wright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

219. Dessert Plate, light blue ground, floral ornament.
Designed by William Wright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

220. Dessert Plate.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

221. Dinner Plate.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

222. Dessert Plate, pink ground, decorated with gold.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

223. Dessert Plate.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

224. Dessert Plate.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

225. Dinner Plate.
Designed by T. Moorcroft, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

226. Oyster Plate.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

227. Portion of Déjeuner Service.
Designed by T. Moorcroft, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

228. Ewer and Basin.
Designed by C. J. Beaupré, *West London.*
Manufactured by Furnival & Son.

229. Fruit Dish, white and gold.
Designed by James F. Marsh, *Burslem.*
Manufactured by Messrs. Davenport.

230. Design for a Porcelain Dessert Plate, cobalt blue ground, gold ornament framing, a centre picture of a scene in Derbyshire, and panels with flowers; also panels with the raised gold letters "*W. E. G.*" being the initials of The Right Hon. W. E. Gladstone, M.P.

A Dessert Service, consisting of 18 plates, 4 tall and 4 low Comports of this pattern, was presented to Mr. Gladstone on December 22nd, 1883, by the Liberal working men of Derby.

Designed by Richard Lunn, *Sheffield.*
The Landscape *painted by* James Platts, Student of the Derby School of Art.
The *Flowers by* James Rouse, sen.
The *Gilding by* Charles Rouse.
Manufactured by the Derby Crown Porcelain Co.

231. Dinner Plate and a Dish and Cover, earthenware. Engraved pattern printed upon the biscuit in peacock green.
Designed by Richard Lunn, *Sheffield.*
Manufactured by the Derby Crown Porcelain Co.

232. Set for Boudoir mantel-piece, painted in blue black, overglaze, earthenware and porcelain, consisting of one clock stand. The decoration illustrates the old adage of "Early to bed, and early to rise, makes a man healthy, wealthy and wise." The clock face is enamelled copper.
Also 2 vases; subjects "Jack and Gill," and "A little bird told me."
Also 2 flower pots; subjects, "Four stages of life."
Also 2 candlesticks; subjects, "Four varieties of illuminators, viz., Sun, Moon, Stars and Lightning."
The whole of these articles were *designed and painted by* Richard Lunn, *Sheffield*, except the candlesticks; these were *painted by* Charles Wright, student in the Derby School of Art, and apprentice at the Derby Crown Porcelain Co.'s Works.
The 2 two-handled vases were *made by* Messrs. Maw, of *Broseley.*
The clock stand and 2 flower pots were *modelled by* Richard Lunn, and *made by* Messrs. McIntyre, of *Burslem.*
The two candlesticks were *made by* the Derby Crown Porcelain Co., and are porcelain.
The whole were designed and made for Sir P. Cunliffe Owen, K.C.M.G., C.B., C.I.E.
Lent by Sir P. Cunliffe Owen. K.C.M.G., C.B., C.I.E.

233. Vase, Etruscan.
Designed by H. Williams, *Coalbrookdale.*
Manufactured by W. Allen, *Coalbrookdale.*

234. Large Flower Vase.
Designed and executed by G. F. Lambert, *Derby.*

235. Large Vase.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by W. Allen, *Coalbrookdale.*

236. Dessert Plate.
Designed by G. F. Lambert, *Derby.*
Manufactured by Crown Porcelain Works, *Derby.*

237. Dessert Plate.
Designed and executed by G. F. Lambert, *Derby.*

238. Dessert Plate.
Designed by G. F. Lambert, *Derby.*
Manufactured by Crown Porcelain Works, *Derby.*

239. Four Cups and Saucers.
Designed by G. F. Lambert, *Derby.*
Manufactured by Crown Porcelain Works, *Derby.*

240. Plaque, decoration in gold.
Designed and executed by G. F. Lambert, *Derby.*

241. Plate, brown and white.
Designed by H. Williams, *Coalbrookdale.*
Manufactured by W. Allen, *Coalbrookdale.*

242. Plate.
Designed by H. Williams, *Coalbrookdale.*
Manufactured by W. Allen, *Coalbrookdale.*

243. Cup and Saucer.
Designed and executed by Mrs. Windass, *York.*

244. Cup and Saucer.
Designed and executed by C. L. Smith, *Selby.*

245. Pair of Vases.
Designed by Louis Bilton, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

246. Pair of Vases.
Designed by Louis Bilton, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

247. Pair of Vases, dark blue ground with flowers.
Designed by William Hodgkinson, *Stoke on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

248. Jardinière, Majolica.
Designed by J. Henk, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

249. Pair of Vases, with decorative medallions of games, &c.
Designed by George Fernyhough, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

250. Flower Holder, dark blue, decoration in gold.
Designed by J. Henk, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

251. Dessert Plate.
Designed by William Hodgkinson, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

252. Dessert Plate, "Dead Game."
Designed by G. Fernyhough, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

253. Flower Holder.
Designed by J. Henk, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

254. Oval Tray.
Designed by W. H. Pilsbury, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

255. Pin Tray.
Designed by Albert Naylor, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

256. Salt Cellar.
Designed by E. Parry, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

257. Tray, Two Cups and Saucers, Sugar Basin, Milk Jug and Tea Pot and Tazza.
Designed by William Hodgkinson, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

258. Vase.
Designed by William Hodgkinson, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

259. Plate, imitation of Limoges enamel.
Designed and executed by G. W. Rhead, *Hanley and Stoke-on-Trent.*

260. Three Porcelain Plaques, ornamented with figures of Cupids, &c.
Designed by J. Cope, *Hanley.*
Manufactured by Messrs. Minton, Hollins, & Co., *Stoke-on-Trent.*

261. Ewer and Basin.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

262. Dark Blue Vase, decorated with gold.
Designed by T. Moorcroft, *Burslem and Hanley.*
Manufactured by E. J. D. Bodley, *Burslem.*

263. Ewer and Basin.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

264. Dessert Plate.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

265. Butter Dish.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

266. Dessert Plate.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

267. Cup and Saucer.
Designed by T. Moorcroft, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

268. Dessert Plate, dark blue and gold.
Designed by A. J. Capey, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

269. Vegetable Dish and Dinner Plate, cream colour, dark blue and gold.
Designed by T. Moorcroft, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

270. Coffee Cup and Saucer.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

271. Plate.
Designed by A. J. Capey, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

272. Jug, ornamented with gold.
Designed by William Wright, *Hanley.*
Manufactured by E. J. D. Bodley, *Burslem.*

273. Dessert Plate.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

274. Jug and Dinner Plate.
Designed by F. Poole, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

275. Plate, blue and white.
Designed by T. Moorcroft, *Hanley.*
Manufactured by E. J. D. Bodley, *Burslem.*

276. Jug, white and gold.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

277. Dinner Plate.
Designed by T. Moorcroft, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

278. Tea Pot.
Designed by Stephen Hartley, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

279. Plate.
Designed by A. J. Capey, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

280. Coffee Pot.
Designed by Stephen Hartley, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

281. Tea Pot, Coffee Pot, and Biscuit Box.
Designed by Stephen Hartley, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

282. Fruit Dish, gold and pink ground.
Designed by William Wright, *Hanley.*
Manufactured by E. J. D. Bodley, *Burslem.*

283. Dessert Plate.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

284. Dessert Plate.
Designed by A. J. Capey, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

285. Toilet Ewer and Basin.
Designed by William Wright, *Burslem.*
Manufactured by E. J. D. Bodley.

286. Breakfast Service and Tray, white and gold.
Designed by A. J. Capey, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

287. Dessert Plate.
Designed by J. Micklewright, *Hanley.*
Manufactured by E. J. D. Bodley, *Burslem.*

288. Breakfast Service on Tray.
Designed by T. Moorcroft, *Hanley.*
Manufactured by E. J. D. Bodley, *Burslem.*

289. Coffee Service on Tray, light green and gold.
Designed by H. Cartwright, *Burslem.*
Manufactured by E. J. D. Bodley, *Burslem.*

290. Dessert and Tea Services, Plates, Cups and Saucers, Portion of Dinner Service, Ewers and Basins, mostly floral decoration.
Designed by H. Overton Jones, *South Kensington.*
Manufactured by George Jones & Sons, *Stoke-on-Trent.*

291. Vase, gold ground and floral decoration in dark blue.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

292. Vase, floral decoration.
Designed by A. Wright, *Hanley.*
Manufactured by Messrs. Doulton, *Burslem.*

293. Pair of Vases, studies of apples.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

294. Large Vase, floral decoration in gold.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

295. Pair of Vases.
Designed by Robert Seadon, *Hanley.*
Manufactured by Messrs. Doulton, *Burslem.*

296. Pair of Flower Vases.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

297. Pair of Jugs.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

298. Vase, dark blue and gold ornament.
Designed by D. Dewsbery, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

299. Pair of Globular Vases, gold ground with floral ornament.
Designed by W. Roberts, *Stoke-on-Trent.*
Manufactured by Messrs. Doulton, *Burslem.*

300. Ewer, dark brown ground, floral ornament.
Designed by James Wooton, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

301. Flower Bowl.
Designed by Robert Seaton, *Hanley.*
Manufactured by Messrs. Doulton, *Burslem.*

302. Pair of Flower Bowls.
Designed by Robert Allen, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

303. Vase, dark blue and gold ornament.
Designed by W. Johnson, *Stoke-on-Trent.*
Manufactured by Messrs. Doulton, *Burslem.*

304. Flower Bowl, ornamented with flowers in dark blue.
Designed by James Wooton, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

305. Flower Bowl, floral decoration in gold.
Designed by Leonard Langley, *Burslem.*
Manufactured by Messrs. Doulton, *Burslem.*

306. Salad Bowl.
Designed by John Hughes, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

307. Tray Mounted in Silver, Tea Pot, Milk Jug, and Sugar Basin, olive green ground, ornamented in gold.
Designed by John Hughes, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

308. Biscuit Box, cream coloured ground, gold ornament.
Designed by Richard Ford, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

309. Breakfast Cruet Stand.
Designed by Richard Ford, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

310. Box, containing Pepper Boxes and Salt Cellars, various designs.
Designed by Joseph Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

311. Box, containing 6 Handles for Salad Forks, various designs.
Designed by Joseph Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

312. Ewer and Stand, Florentine decoration in white on red ground.
Designed by Joseph Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

313. Box, containing Pepper Castors and Mustard Pots.
Designed by Joseph Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

314. Biscuit Box, salmon coloured ground, decorated in gold.
Designed by Joseph Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

315. Biscuit Box, olive green ground.
Designed by Joseph Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

316. Pair of Vases, white ground, floral decoration in gold.
Designed by Richard Ford, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

317. Ewer and Basin.
Designed by J. Parr, *Burslem.*
Manufactured by Brownhill Pottery Co., *Tunstall.*

318. Ewer and Basin.
Designed by J. F. Marsh, *Burslem and Stoke.*
Manufactured by Messrs. Davenport, *Longton.*

319. Jug, terra cotta.
Designed by J. F. Marsh, *Burslem and Stoke-on-Trent.*
Manufactured by Messrs. Davenport, *Longton.*

320. Flower Vase, terra cotta.
De igned by J. F. Marsh, *Burslem and Stoke-on-Trent.*
Manufactured by Messrs. Davenport, *Longton.*

321. Ewer and Basin.
Designed by J. F. Marsh, *Burslem and Stoke-on-Trent.*
Manufactured by Messrs. Davenport, *Longton.*

322. Cup and Saucer.
Designed by J. F. Marsh, *Burslem and Stoke-on-Trent.*
Manufactured by Messrs. Davenport, *Longton.*

323. Pair Large Ornamental Flower Bowls.
Designed by Louis Bilton, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

324. Pair Large Ornamental Flower Bowls.
Designed by Louis Bilton, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

325. Large Flower Holder on Stand.
Designed and modelled by John Henk, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

326. Two Flower Bowls and Jardinière.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Messrs. Maw & Co., *Coalbrookdale.*

327. Design for Plate.
By Mary Brett, *Dublin.*
Manufactured by Wedgewood & Sons.

328. Design for Majolica Plaque.
By J. O. Poole, *South Kensington.*

329. Design for Painted Tazza.
By William Davis, *Coalbrookdale.*

330. Design for Tea Pot, Cups, and Saucers.
By Miss Frances Brett, *Dublin.*

331. Design for Plate.
By Miss Emily Mitchell, *West London.*

332. Design for Salver and Pilgrim Bottle.
By Miss Marianne Mansell, *Lambeth.*

333. Design for Salad Bowl and Vase.
By E. Rogers, *Westminster and Lambeth.*

334. Design for China Plaque.
By Miss Mary Denley, *Westminster and Lambeth.*

335. Design for Candlesticks and Vase.
By Miss Martha M. Rogers, *Westminster and Lambeth.*

336. Design for China Plaque.
By Miss Mary Denley, *Westminster and Lambeth.*

337. Designs for Cups and Saucers.
By George Lambert, *Derby.*

338. Designs for Cups and Saucers.
By Miss Martha Rogers, *Westminster and Lambeth.*

339. Original Designs for Cups, Early English and Japanese.
By Albert Binns, *Worcester.*

340. Design for Painted Tazza.
By Frederick Leighton, *Coalbrookdale.*

341. Design for Cups and Saucers.
By Miss Gertrude Ginn, *East Herts.*

342. Designs for Door Plates.
By Miss Mary Rogers, *Westminster and Lambeth.*

343. Design for Plates.
By G. F. Lambert, *Derby.*

344. Design for Dessert & Tea Services.
By Henry Hill, *Boston.*

345. Design for Vase and Dish.
By Miss Mary Moore, *Preston.*

346. Design for Cups and Saucers.
By Miss Mary Moore, *Preston.*

347. Design for Painted Tiles, &c.
By Miss Martha Rogers, *Westminster and Lambeth.*

348. Design for Dessert Plates.
By G. F. Lambert, *Derby.*

349. Design for Dessert Plates.
By G. F. Lambert, *Worcester.*

350. Design for Plate.
By James Boyle, *Dublin.*

351. Design for Dinner Service.
By Frederick Leighton, *Coalbrookdale.*

352. Design for Plates.
By Miss Mary Cox, *Worcester.*

353. Design for Plates.
By G. F. Lambert, *Worcester.*

354. Design for Parian Plate.
By H. J. Hadley, *Worcester.*

355. Design for Cups and Saucers.
By Miss Mary Holmes, *Great Yarmouth.*

356. Design for Persian Vase.
By Louis Hadley, *Worcester.*

357. Design for Water Bottle.
By Miss Mary Moore, *Preston.*

358. Design for Tiles.
By John Briggs, *Edinburgh.*

359. Design for Porcelain Vase.
By J. C. Callowhill, *Worcester.*

360. Design for Borders and Cups and Saucers.
By J. C. Callowhill, *Worcester.*

361. Design for Painted Panel.
By W. Gandy, *Lambeth.*

362. Design for Panel.
By Miss Mary Denley, *Westminster and Lambeth.*

363. Design for Tiles.
By Miss Mary Denley, *Westminster and Lambeth.*

364. Design for Tiles.
By E. Hammond, *West London and Lambeth.*

365. Design for Tiles.
By Thomas Smith, *Coalbrookdale.*

366. Design for Encaustic Tiles.
By J. C. Gibbs, *Worcester.*

367. Design for Tiles.
By Miss Mary Denley, *Westminster and Lambeth.*

368. Design for Dessert Plates.
By Mrs. Eassie, *Gloucester.*

369. Design for Tiles.
By William H. Woodall, *West London.*

370. Design for Fireplace.
By Miss Mary Denley, *Westminster and Lambeth.*

371. Photographs of Designs for Tiles.
By Mrs. C. A. Sparkes, *Lambeth.*

372. Design for Freize.
By Edward Hammond, *West London and Lambeth.*

373. Two Frames of Tiles (Panels).
Designed by T. Emery, *Stoke-on-Trent.*
Manufactured by Minton, Hollins & Sons, *Stoke-on-Trent.*

374. Two Frames of Tiles (Panels).
Designed and executed by W. H. Dixon, *Broseley.*
Manufactured by Minton, Hollins & Sons, *Stoke-on-Trent.*

375. Three Decorative Tiles.
Designed and executed by F. Abraham, *West London.*

376. Tiles.
Designed and executed by Anna Baker, *Cork.*

377. Three Decorative Panels.
Designed by William Simpson, *South Kensington.*
Manufactured by Minton, Hollins & Sons, *Stoke-on-Trent.*

378. Decorative Panel.
Designed by A. Wright, *Stoke-on-Trent.*
Manufactured by Minton, Hollins & Sons, *Stoke-on-Trent.*

379. Panel, Decorative Tiles.
By A. Slater, *Stoke-on-Trent.*
Manufactured by Minton, Hollins & Sons.

380. Decorative Panel.
Designed by S. Buxton, *Stoke-on-Trent.*
Manufactured by Minton, Hollins & Sons.

381. Decorative Panel.
Designed by Miss Sarah Bradley.
Manufactured by Minton, Hollins & Sons.

382. Tile.
Designed and executed by Miss Anne Baker, *Cork.*

383. Tiles.
Designed by W. Bradburn, *Coalbrookdale.*
Manufactured by Maw & Co., *Coalbrookdale.*

384. Frame, containing Tiles.
Designed by R. A. Ledward, *Burslem.*
Manufactured by Craven, Dunhill & Co., *Ironbridge, Salop.*

385. Panel.
Designed and executed by R. A. Ledward, *Burslem.*
(Lent by Sir Philip Cunliffe-Owen, K.C.M.G., C.B., C.I.E.)

386. Design for Tiles.
By Miss Margaret Hill, *Cork.*

387. Two Frames of Tiles.
Designed by F. Leighton, *Coalbrookdale.*
Manufactured by Craven Dunhill & Co.

388. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

389. Decorative Panel.
Designed by Carl Almquist, *West London.*
Manufactured by Shrigley & Hunt.

390. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

391. Decorative Panel.
Designed by Joseph Baugham, *Coalbrookdale.*

392. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Executed by Maw & Co., *Coalbrookdale.*

393. Decorative Panel, white glaze tiles.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

394. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

395. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

396. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

397. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

398. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

399. Decorative Panel, white glaze tiles.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

400. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

401. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

402. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

403. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

404. Decorative Panel.
Designed by Owen Gibbons, *Cirencester and South Kensington.*
Manufactured by Maw & Co., *Coalbrookdale.*

405. Decorative Panel.
Designed and executed by Miss Margaret Hill, *Cork.*

406. Design for Mosaic Floor.
By James Thomas, *Westminster.*

407. Two Mosaic Pavements.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

408. Pair of Decorative Panels.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

409. Two Designs for Roman Mosaic Pavements.
By Edwin Jarratt, *Coalbrookdale.*

410. Design for Tiles.
By John Briggs, *Edinburgh.*

411. Frame of Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

412. Design for Mosaic Floor.
By O. R. Albrow, *Great Yarmouth.*

413. Frame of Tiles.
Designed and executed by Charles Campbell, *Lambeth and West London.*

414. Design for Hearth Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

415. Design for Hearth Tiles.
By Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

416. Decorative Panel, Persian Pattern.
Designed and executed by Andrew Childe, *Coalbrookdale.*

417. Floor Tiles, imitation Mosaic.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

418. Frame of Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

419. Floor Tiles, imitation Mosaic.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

420. Decorative Panel.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

421. Decorative Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

422. Decorative Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

423. Decorative Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

424. Decorative Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

425 Pair of Small Panels. Decorative Tiles.
Designed and executed by Charles Campbell, *Lambeth and West London.*

426. Imitation Persian Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

427. Decorative Tiles.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

428. Frame containing 12 Tiles, historical objects and nursery rhymes.
Designed by Moyr Smith, *Glasgow and Kensington.*

429. Frame containing 6 Tiles.
Designed and executed by Moyr Smith, *Glasgow and Kensington.*

430. Frame containing 12 Tiles.
Designed and executed by Moyr Smith, *Glasgow and Kensington.*

431. Frames containing Decorative Tiles illustrating Sir Walter Scott's Poems.
Designed and executed by Moyr Smith, *Glasgow and Kensington.*

432. Frame containing 4 Tiles.
Designed by W. H. Pilsbury, *Stoke-on-Trent.*
Two designed by Louis Bilton, *Stoke-on-Trent.*
One designed by Edward Berks, *Stoke-on-Trent.*
Manufactured by Messrs. Minton, *Stoke-on-Trent.*

433. Two Frames containing Decorative Panels in Terra Cotta.
Designed and executed by R. J. Morris, *South Kensington.*

434. Decorative Tiles for Fire-grate, impasto ware.
Designed and executed by F. Lewis, *Lambeth.*
Manufactured by Messrs. Doulton & Co.

435. Decorative Tiles, pomegranate,
Designed and executed by E. Roberts, *Lambeth.*
Manufactured by Messrs. Doulton & Co.

436. Decorative Tiles, wild flowers.
Designed and executed by F. Lewis, *Lambeth.*
Manufactured by Messrs. Doulton & Co.

437. Decorative Tiles, lilies.
Designed and executed by Mrs. Hall, *Lambeth.*
Manufactured by Messrs Doulton & Co.

438. Four Tiles, female heads.
Designed and executed by Miss Philpot, *Lambeth.*
Manufactured by Messrs. Doulton & Co.

439. Decorative Tiles for Fireplace.
Designed by Owen Gibbons, *Cirencester.*
Manufactured by Maw & Co., *Coalbrookdale.*

440. Four Terra Cotta Panels.
Designed and executed by John Broad, *Lambeth.*
Manufactured by Messrs. Doulton.

SECTION III.

Glass — Cut, Engraved, Flashed, Pressed, &c.; Stained and Painted Glass in windows or panels.

441 Glass Vase, cameo cut, with floral decoration.

442. Glass Lamp, cameo cut, red and ivory floral decoration.

443. Glass Vase, amber pattern.

444. Glass Vase, cameo cut, with dented sides.

445. Two Glass Vases, gold ground, with ruby fruit and gold leaves.

446. Glass Scent Bottle, ruby on dull white.

447. Glass Scent Bottle, opal on green, cameo cut.

448. Glass Scent Bottle, opal on brown, cameo cut.

449. Glass Vase, opal on green, cameo cut.

450. Glass Bowl, topaz and red, perforated, cameo cut.

451. Glass Vase, cameo cut, brown with white decoration.

452. Glass Scent Bottle, red on lemon, cameo cut.

453. Glass Pilgrim Bottle, brown decoration, in white, tinted in yellow, cameo cut.

454. Two-Handled Glass Vase, brown body, decoration in white, cameo cut.

455. Glass Vase, green, cameo cut.

456. Two-handle Bottle, red on ivory, cameo cut.

457. Glass Finger Bowl, white on pink ground, cameo cut.
Designed and executed by Thomas Woodall, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

458. Glass Bowl and Plate, cameo cut.
Designed and executed by Thomas Woodall, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*
(Lent by Lady Cunliffe-Owen.)

459. Glass Vase, white, with decoration in yellow, cameo cut.

460. Glass Vase, light brown, with decoration in white, cameo cut.

461. Glass Bowl, amber, with decoration in red, cameo cut.

462. Glass Vase, amber body, decoration in red, cameo cut.

463. Glass Vase, white and yellow, cameo cut.

464. Glass Vase, yellow and red ornament, cameo cut.

465. Glass Scent Bottle, blue and white ornament, cameo cut.

466. Glass Toilet Bottle, blue and white, Russian design, cameo cut.

467. Glass Bowl, amber, with decorations in white, cameo cut, Russian design.

468. Glass Vase, blue, with dragons in white, cameo cut.

469. Glass Vase, yellow body with decorations in red, cameo cut.

470. Hock Glass, topaz bowl, with decorations in red. Leg and foot of flint glass.

471. Glass Vase, amber, with decoration in white, cameo cut.
Designed and executed by Jabez Facer, *Stourbridge.*
Manufactured by Messrs. T. Webb & Sons, *Stourbridge.*

472. Glass Gourd-shaped Vase, ivory on ruby ground, Indian design.

473. Glass Bowl with raised stem, carved in the jade style.

474. Glass Scent Bottle, alabaster, with decoration in blue, cameo cut.

475. Glass Scent Bottle, pink ground, with white decoration, cameo cut.

476. Glass Scent Bottle, beeswax ground, with opal decoration, cameo cut.
Designed by T. Woodall, *Stourbridge.*
Executed by Francis Smith, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

477. Glass Vase, cameo cut, white on brown ground.

478. Cameo Plaque: "Blind Man's Buff," brown body, with figures and flowers in white.

479. Glass Scent Bottle, green, with white decoration, cameo cut.

480. Four Glass Panels, black ground, with decoration in white, cameo cut.

481. Glass Cameo Plaque, dark brown ground with white figures—"Dancing Girls."

482. Pair of Glass Vases, ruby, with white decoration, cameo cut.

483. Glass Finger Bowl, turquoise and opal, cameo cut.

484. Two Glass Scent Bottles, red and white, "Cupids," cameo cut.

Designed by George Woodall, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

485. Three Glass Scent Bottles, and one Vase, decorations in white on various coloured grounds, cameo cut.

Designed by T. Woodall, *Stourbridge.*
Executed by J. Hodgetts, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

486. Three Glass Scent Bottles various colours, cameo cut.

Glass Vase, slate-coloured ground, decorations in white, cameo cut.

Designed by T. Woodall, *Stourbridge.*
Executed by Benjamin Hollis, *Dudley.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

487. Glass Vase, bronze on green ground, cameo cut.

488. Glass Dessert Plate, brown, with white decorations, Russian style.

489. Glass Dessert Plate, lemon ground, with ruby decorations.

Designed by T. Woodall, *Stourbridge.*
Executed by William Hill, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

490. Glass Bowl, engraved in the Rock Crystal Style.

Designed by T. Woodall, *Stourbridge.*
Executed by Theodore Kny, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

491. Glass Cameo Vase, with white and pink decoration, Chinese style.

492. Glass Cameo Vase, blue, pink and white decoration.

Designed by T. Woodall, *Stourbridge.*
Executed by H. A. Davis, *Stourbridge,*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

493. Glass Vase, lemon ground, with green decorations.

494. Glass Vase, cameo cut, amber ground.

495. Glass Vase, blue and red, on ivory ground, cameo cut.

496. Glass Vase, opal on red, cameo cut.

497. Glass Vase, cameo cut.

498. Glass Vase, amber, with white decoration.

499. Glass Vase, yellow and red decoration.

Designed by T. Woodall, *Stourbridge.*
Executed by J. T. Fereday, *Dudley.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

500. Decorated Glass Bowl, ruby and gold.

Designed and executed by E. Goodyear, *Dudley.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

501. Glass Vase, cameo cut, ivory on red, "Orchids."

502. Glass Vase, cameo cut, amber body, with white flowers and green leaves.

Designed by T. Woodall.
Executed by W. H. Richardson, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

503. Flint Glass Water Set, richly cut and embossed.

Designed and executed by William Adey, *Stourbridge.*
Manufactured by Thomas Webb & Sons, *Stourbridge.*

504. Cut Glass Decanter.

Designed by Frederick Carder, *Stourbridge.*
Executed by Charles Swayne, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

505. Two Orange-cased Hock Glasses.

Designed by John Northwood.
Executed by Charles Swayne.
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

506. Flint Glass Claret Jug and two Wine Glasses.

Designed and executed by Frank Scheibner, *Stourbridge.* Price £5.
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

507. Flint Glass Bowl, imitation of rock crystal.
Designed by J. Northwood.
Executed by Frank Scheibner, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

508. Engraved Sorbet Cup and Saucer, in ruby and flint glass.
Designed by Frederick Carder, *Stourbridge.*
Executed by J. Orchard, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

509. Decanter and Wine Glass, engraved imitation of rock crystal.
Designed by Frederick Carder, *Stourbridge.*
Executed by J. Orchard, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

510. Glass Cameo Vase, pink ground-decoration in white. Price £15 15*s.*

511. Two Small Cameo Plaques: The Head of Shakespeare (Price £6 6*s.*) and Convolvuli.

512. Seven Wine Glasses.
Designed and executed by William Northwood, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

513. Two Cameo Cut Vases.
Designed and executed by Charles Northwood, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

514. Cameo Carved Column for Lamp, in amber and white glass.
Designed by J. Hill, *Stourbridge.*
Executed by Daniel Beach, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

515. Opal and Pink Glass Fruit Dish.
Designed by John Northwood, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

516. Nine Wine Glasses.
Designed and etched by James Hill, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

517. Wine Glass, rock crystal.
Designed and executed by E. Hammond, *Stourbridge.*
Manufactured by Messrs. Stevens & Williams, *Brierley Hill Glass Works.*

518. Two frames of Designs for Wine Glasses and Tazzas.
By James Hill, *Stourbridge.*

519. Designs for Wine Glasses.
By Marian Mansell, *Lambeth.*

520. Design for Claret Jug.
By Ellen M. Ayers, *Great Yarmouth.*

521. Design for Claret Jug.
By E. K. Cracknell, *Great Yarmouth.*

522. Two Paintings, Portraits of Tennyson and Carlyle. Painted on glass.
Designed by Thomas Wilson, *Edinburgh.*
Manufactured by Messrs. Ballantyne & Sons, *Edinburgh.*

523. Ornamental Panel, stained glass.
Designed by William Savage, *Manchester.*
Manufactured by R. B. Edmundson & Sons, *Manchester.*

524. Figure Panel in stained glass.
By Thomas Jenkinson, *Manchester.*
Manufactured by R. B. Edmundson & Sons, *Manchester.*

525. Panel in Stained Glass.
Designed and executed by Robert Purcell, *Manchester.*
Manufactured by R. B. Edmundson & Sons, *Manchester.*

526. Stained Glass Panel and three Designs for Stained Glass Windows.
Designed and executed by William Boss, *Edinburgh.*

527. Stained Glass Panel and Design for Stained Glass Window.
Designed and executed by George Charles Haité, *Croydon.*

528. Seven Designs for Stained Glass Windows.
Designed and executed by F. G. Smith, *Lambeth.*

529. Three Drawings of Stained Glass Windows.
By Jane J. Collis, *Salisbury.*

530. Frame of Designs for Stained Glass Windows for Public Buildings.
2 Frames of Designs for Ecclesiastical Windows.
Cartoon, Merlin's Tower, Camelot, for execution in stained glass,
Designed by T. W. Camm, *Birmingham.*

531. Design for Stained Glass Window.
By Sarah Ann Bradley, *Bloomsbury.*

532. Design for Stained Glass Window.
By Carl Almquist, *West London.*
Manufactured by Messrs. Shrigley & Hunt, *Bedford Row, W.C.*

533. Two Frames of Designs for Stained Glass Windows.
Designed by E. Hammond, *Lambeth and West London.*
Manufactured by Campbell, Smith & Campbell.

534. Design for Stained Glass Window.
By W. J. Morgan, *South Kensington.*

535. Design for Stained Glass Window.
By H. Rossiter, *South Kensington.*

536. Design for Stained Glass Window.
By C. Hardgrave, *South Kensington.*

537. Two Panels, stained glass, Romeo and Juliet and Taming of the Shrew, and Panel Renaissance Ornament.
Designed and executed by Edward Frampton, *West London.*

538. Four Cartoons for stained glass windows, illustrating music and dancing.

539. Eight Frames, containing designs for stained glass windows and mural decoration.
By Edward Frampton, *West London.*

540. Cartoon designed for stained glass.
By Miss Emily G. Thompson, *Manchester.*

541. Design for stained glass window.
By Wm. G. Boss, *Edinburgh.*

542. Design for stained glass windows.
By Moyr Smith, *Glasgow and South Kensington.*

SECTION IV.

Enamels on Metal, Cloisonné, Champlevé, &c.

543. Three studies in enamel on copper, viz.:—(1) Plaque in the manner of old Limoges enamel.
(2) Head of a lady, drapery in translucent enamel.
(3) Rhododendrons, study from nature.
Painted by Miss Rosa Wallis, *South Kensington.*

544. Plaque enamel on copper, in the manner of old Limoges.
Designed by George Wallis, F.S.A., *Somerset House.*
Painted by Miss Rosa Wallis, *South Kensington*

545. Pair of Vases, cloisonné enamel.
Designed by E. Duffield, *Birmingham.*
Executed by Messrs. Elkington, *Birmingham.*

546. Pair of Vases, cloisonné enamel.
Designed by E. Duffield, *Birmingham.*
Executed by Messrs. Elkington, *Birmingham.*

547. Vase, champlevé enamel.
Designed by E. Duffield, *Birmingham.*
Executed by Messrs. Elkington, *Birmingham.*

548. Large Vase, cloisonné enamel, on gilt metal base.
Designed by E. Duffield, *Birmingham.*
Executed by Messrs. Elkington, *Birmingham.*

549. Plate, cloisonné enamel.
Designed by E. Duffield, *Birmingham.*
Executed by Messrs. Elkington, *Birmingham.*

550. Design for an enamelled casket.
By Miss Marianne Mansell, *Lambeth.*

SECTION V.

Ornamental Metal-work. — Bronze, Brass, Iron cast or wrought. Drawings and Photographs of such works as may have been executed.

551 15 Salvers, Alms Dishes, &c.
Designed by W. H. Singer and E. R. Singer, *Frome and South Kensington.*
Manufactured by Messrs. J. W. Singer & Sons, *Frome.*

552. Door Plates, Lock, Door-handles, Crucifix, Bolts, &c., in wrought iron.
Designed by Thomas T. Freeman, *Manchester.*
Manufactured by Freeman & Collier, *Manchester.*

553. Hinge, Bell-pull, Door-handle, Finger-plates, Gas Brackets, Candle Bracket, in polished brass.
Designed by Thomas T. Freeman, *Manchester.*
Manufactured by Freeman & Collier, *Manchester.*

554. Bronze Gas Bracket and Candelabra.
Designed by Thomas T. Freeman, *Manchester.*
Manufactured by Freeman & Collier, *Manchester.*

555. Door Handle, brass, nickel plated.
Designed by Thomas T. Freeman, *Manchester.*
Manufactured by Freeman & Collier, *Manchester.*

556. Decorative Cast Iron Panel.
Decorative Cast Brass Panel.
Decorative Pewter Panel, used as pattern for bronze castings.
Designed and executed by C. H. Jessop, *Sheffield and Derby.*

557. Small Copper Panel, repoussé scroll work.
Designed and executed by James Booth, *Sheffield.*

558. Two Designs for Metal Panels in wax.
Designed by John Fisher, *Sheffield and South Kensington.*

559. Wrought and Polished Iron Candlestick.
Designed and executed by William Letheren (Senior), *Cheltenham.*

560. Bronze Loving Cup.
Designed and modelled by Henry Archer, *Sheffield.*

561. Eagle Lectern in Polished Brass.
Designed by W. H. and E. R. Singer, *Frome and South Kensington.*
Manufactured by J. W. Singer & Sons, *Frome.*

562. Three Cast Iron Panels, for stove grates.
Designed by G. A. Illston, *Rotherham and Sheffield.*
Manufactured by Corbitt & Co., *Rotherham.*

563. Flower Stand.
Designed by H. P. Hodkinson, *Coventry.*

564. Four Lamp Brackets and Lamps, wrought iron and polished brass.
Designed by W. H. and E. R. Singer, *Frome and South Kensington.*
Manufactured by J. W. Singer & Sons, *Frome.*

565. Wrought-iron Screen, copper panel in centre.
Designed by W. H. and E. R. Singer, *Frome and South Kensington.*
Manufactured by J. W. Singer & Sons, *Frome.*

566. Portion of Balustrade, wrought-iron.
Designed by J. D. Sedding.
Manufactured by Longden & Co., *Sheffield.*

567. Wrought-iron Grille.
Designed and executed by W. Letheren, *Cheltenham.*
Lent by the South Kensington Museum.

568. Hammered-iron Window Grille.
Designed and executed by Samuel Hobbs, *Young Men's Christian Institute, Long Acre.*

569. Wrought-iron Cabinet.
Designed by H. Faulks, *Birmingham.*
Manufactured by A. Newman, *London.*

570. Gate and Railings, cast-iron.
Designed by George W. Shepherd, *Coalbrookdale.*
Manufactured by The Coalbrookdale Iron Co., *Salop.*

571. Pediment of Gates in wrought iron.
Designed and made by W. H. Letheren, *Cheltenham.*

572. Grate, cast iron.
Designed by Joseph Kershaw, *Coalbrookdale.*
Manufactured by The Coalbrookdale Co., *Salop.*

573. Grate.
Designed by G. A. Illston, *Sheffield.*
Manufactured by W. Corbitt & Co., *Rotherham.*

574. Three Grates and Two Fenders.
Designed and modelled by F. C. Jessop, *Rotherham.*
Manufactured by F. C. Jessop, *Rotherham.*

575. Bronze Dining-room Grate.
Designed by J. Lawson, *Sheffield.*
Manufactured by Watson, Moorwood & Co., *Sheffield.*

576. Cast-iron Grate Front.
Designed by G. W. Shepherd, *Coalbrookdale and South Kensington.*
Manufactured by The Coalbrookdale Co., *Salop.*

577. Cast-iron Chimney-piece and two Cast-iron Garden Seats.
Designed by John Moses.
Manufactured by The Coalbrookdale Co., *Salop.*

578. Grate with Tiles.
Designed by William Turner, *Edinburgh.*
Manufactured by Scott, Morton & Co., *Edinburgh.*

579. Three Polished Brass Chandeliers.

580. Three Gas Brackets, polished brass.

581. One Fender, polished brass, with Fire Dogs surmounted by brass rosettes.
Designed by Henry Poynton, *Coventry.*
Manufactured by Richardson, Ellson & Co., *Coventry.*

582. Statuette in Bronze: "Cimabue."
Designed and modelled by Emily Selous (Mrs. Fenessy), *Bloomsbury.*
Executed by C. Delpech.
(Lent by the Art Union of London.)

583. Door Knocker in wrought iron.

584. Letter Box in wrought iron.

585. Piece of Holly in wrought iron.

586. Mirror Frame in wrought iron.
Designed and executed by Charles Letheren, *Cheltenham.*

587. Nickle-plated Gas Bracket.

588. Bronze Gas Bracket.

589. Three Brass Chandeliers.

590. Fire Iron Rests, black and brass, and all brass.

591. Brass Fire Iron Standard.
Designed by Thomas C. Smart, *Dudley.*
Manufactured by T. Smart, *Dudley.*

592. Three Polished Brass Fenders.
Fire Brasses, Rests, and Stops.
Designed by Samuel Thompson, *Sheffield.*
Manufactured by Thomas Hague, *Sheffield.*

593. Two Polished Brass Chandeliers.

594. Polished Brass Library Light, for candles or gas.
Designed by T. W. Maddox, *Birmingham.*
Manufactured by Thomas Ford & Sons, *Birmingham.*

595. Polished Brass Fender, Fire Brasses, Fire Dogs.
Designed by T. W. Maddox, *Birmingham.*
Manufactured by Crofts & Assinder, *Birmingham.*

596. Polished Brass Bracket.
Designed by T. W. Maddox, *Birmingham.*
Manufactured by W. Whitehouse & Co., *Birmingham.*

597. Two Polished Brass Chandeliers.
Designed by T. W. Maddox, *Birmingham.*
Manufactured by James Barwell, Son & Co., *London and Birmingham.*

598. Six Fire-iron Heads.
Designed by George V. Parkin, *Dudley.*
Manufactured by T. Smart, *Dudley.*

599. Oval Brass Mirror with Girandoles.
Designed by J. Challen Beattie, *Birmingham and Stoke-on-Trent.*
Manufactured by W. Tonks & Sons, *Birmingham.*

600. Polished Brass Chandelier.
Designed by H. P. Hodkinson, *Coventry.*
Manufactured by H. Hodkinson, *Coventry.*

601. Lacquered Brass Frame.
Designed and executed by Edwin Fox, *Birmingham and South Kensington.*

602. Polished Brass Pendant Lamps, Candlesticks, Sconces, Candelabra, Gas Brackets and Door Knockers, Repoussé Copper Panel, with Candle Brackets, wrought-iron Pendant Lamps, Lamp Stands and Chains.
Designed by W. H. & E. R. Singer, *Frome and South Kensington.*
Manufactured by Messrs. J. W. Singer & Sons, *Frome.*

603. Polished Cast Brass Clocks, Candelabra, Candlesticks, Inkstands, Vases, Mirror, Girandoles, &c.
Designed by Herbert Mason, *Birmingham and South Kensington.*
Manufactured by Herbert Mason & Co., *Birmingham.*
Lent by Messrs. Mappin & Webb.

604. Designs for Iron Gates and Chancel Standard.
By Theodore J. Dalgleish, *Coventry.*

605. Design for Iron Gates.
By G. W. Shepherd, *Coalbrookdale.*

606. Design for Wrought-iron Reredos. Design for Wrought-iron Gates, four Brass Standard Lamps.
By John J. Trego, *Coventry.*

607. Designs for Wrought-iron Railing, Balcony, Grille.
By Miss Sydney Thompson, Belfast.

608. Design for Wrought-iron Lodge Gates.
By F. C. Jessop, *Rotherham.*

609. Designs for four Wrought-iron Grilles and Wrought-Iron Gates.
By O. R. Albrow, *Great Yarmouth.*

610. Design for Metal Screen.
By P. S. Perkins, *Leicester.*

611. Design for Balustrade with Lamp and Bronze Fire Dogs.
By Stuart Thorpe, *Sheffield.*

612. Design for Wrought-iron Gates.
By M. Garbutt, *West London.*

613. Design for Cast-iron Centre Lamp.
By C. E. Wilson, *Sheffield.*

614. Design for Entrance Gates.
By Charles Letheren, *Cheltenham.*

615. Design for Wrought-iron Gates.
By J. Mayston, *Great Yarmouth.*

616. Design for Wrought-iron Gates.
By W. J. Newman, *South Kensington.*

617. Design for Metal Chancel Screen.
By H. Chattaway, *Coventry.*

618. Design for Wrought-iron Entrance Gate.
By R. Ayling, *Westminster.*

619. Design for Wrought-iron Gates, Burlington House.
By H. Poynton, *Coventry.*
Manufactured by Richardson, Ellson & Co., *Coventry.*

620. Design for Park Gates, wrought-iron.
By J. McCulloch, *Belfast.*

621. Design for Wrought-iron Gates.
By H. S. Bridgewater, *Dudley.*

622. Design for Wrought-iron Gates and Screen.
By Frank Marshall, *Nottingham.*

623. Design for Wrought-iron Gates.
By Mary Cox, *Worcester.*

624. Design for Cast-iron Hat and Umbrella Stand.
By H. S. Tomlins, *Worcester.*

625. Design for Polished Brass Pendants for electric light.
By G. W. Maddox, *Birmingham.*

626. Two Photographs, cast-iron centre lamps.
Designed by Charles Wilson, *Sheffield.*

627. Design for Brass Chandeliers and Lamps.
By G. E. Tucker, *West London.*

628. Seven Frames of Photographs of Lecterns, Lamp Standards, Crosses, Alms Dishes, &c.
Designed by W. H. & E. R. Singer, *Frome and South Kensington.*
Manufactured by W. J. Singer & Sons, *Frome.*

629. Photographs—Lodge Gates, Lamp Standards, Tomb Railings, and Monumental Iron Work.
Designed by W. Letheren, *Cheltenham.*
Manufactured by W. Letheren, *Cheltenham.*

630. Two Brass Dog Grates, with Engraved Brass Work, Fire Irons and Fender.
Designed by H. Longden & F. Fidler. *Sheffield.*
Manufactured by Longden & Co., *Sheffield.*

631. Two Perforated Copper Panels, Repoussé work.
Designed by H. Longden & F. Fidler, *Sheffield.*
Executed by W. Bullas, *Sheffield.*

632. Design for Brass Chandelier.
By George Illston, *Sheffield.*

633. Five designs for decoration of japanned iron trays.
By H. T. Tomlins, *Worcester.*

SECTION VI.

Silver and Gold Plate, Plated Wares, Electro Deposits, including models for silver and gold work. Drawings and Photographs of such works as may have been executed.

634. Candelabra, electro-plate, £52 10*s.*

635. Breakfast Service, consisting of coffee, tea, sugar, cream and kettle and stand, electro-plate, £22 13*s.*

636. Claret Jug, electro-plate, £6 6*s.*

637. Stand for Rosewater Dish, electro-plate, £66 3*s.*

638. Centre Piece, electro-plate, £105.

639. Liquor Frame, electro-plate, £13 5*s.*

640. Sugar and Cream Stand, electro-plate, £3 6*s.* 6*d.*

641. Sugar and Cream Stand, electro-plate, £4 8*s.* 6*d.*; and Cruet Stand, £8 6*s.*

642. Sugar and Cream Stand, electro-plate, £4 15*s.*

643. Claret Jug, electro-plate, £5 5*s.*

644. Cup, electro-plate, £6 12*s.* 6*d.*

645. Flower Stand, electro-plate, £7 17*s.* 6*d.*

646. Flower Stand, electro-plate, £6 11*s.* 6*d.*

647. Flower Stand, electro-plate, £4.

648. Cruet Frame, electro-plate, £6 11*s.* 6*d.*

649. Ice-water Jug, electro-plate, £8 2*s.* 6*d.*

650. Claret Jug, silver, £18 18*s.*
Designed by George Allen, *Birmingham.*
Manufactured by Messrs. Elkington & Co.

651. Centre Piece, china-mounted, in metal gilt, £30.

652. Two End Pieces, china mounted in metal gilt, £10 each.

653. Punch Bowl, silver, £100.

654. Pair 3-Light Candelabra, china, mounted in metal gilt.

655. Sugar and Cream Stand, electro-plate, £2 2*s.*

656. Egg Frame, electro-plate, £5 15*s.* 6*d.*

657. Marmalade Jar, electro-plate, £2 12*s.* 6*d.*

658. Butter Dish, electro-plate, £1 17*s.* 6*d.*

659. Tea, Sugar and Cream electro-plate, "Fluted," £10 2*s.* 6*d.*

660. Two Pairs Salts, electro-plate, 19*s.* per pair.

661. Cruet Frame, electro-plate, £6 12*s.* 6*d.*

662. Liquor Frame, electro-plate, £7 17*s.* 6*d.*

663. Liquor Frame, electro-plate, £13 5*s.*

664. Biscuit Box, electro-plate, £4 4*s.*

665. Coffee, Tea, Sugar and Cream, electro-plate, £23.

666. Tea Tray, electro-plate, £13.

667. Turnover Hash-dish, electro-plate, £12 12*s*, and Cruet Frame, £6 16*s.* 6*d.*

668. Claret Jug, electro-plate, £10.

669. Sugar Basket, glass mounted, £2.

670. Sugar-basket, glass mounted, £2 7*s.* 6*d.*

671. Strawberry Stand, £6 12*s.* 6*d.*

672. Table Candlesticks, £5 10*s.*

673. Table Candlesticks, £6.

674. Strawberry Stand, £4.

675. Cake Basket, £4 4*s.*
Designed by H. Fellows, *Birmingham.*
Manufactured by Messrs. Elkington & Co., *Birmingham.*

676. Athletic Shield of heraldic form, small repoussé panels, £5. 5*s*.

677. Athletic Shield of heraldic form, small repoussé panels, £5 5*s*.

678. Centre Piece, electro-plate, £47 5*s*.

679. Oval End Piece, electro-plate, £16 16*s*. each.

680. Four Compotiers, electro-plate, £7 7*s*. each.

681. Coffee, Tea, Sugar and Cream Set, electro-plate, £21 15*s*.

682. Tray, electro-plate, £23 2*s*.

683. Cruet, electro-plate, £6.

684. Cruet, electro-plate, £7.

685. Butter Dish, electro-plate, £2 10*s*. 6*d*.

686. 6 Salts, electro-plate, 12*s* 6*d*. each.

687. Heart-shaped Tea, Sugar and Cream Set, silver-gilt, £35.

688. Oblong Tray, silver-gilt, £40.

689. Biscuit Box, silver, £25.

690. Bouquet Holder, silver, £7 7*s*.

691. Silver Cradle, Centre Piece.
Designed by Challen Beattie, *Birmingham.*
Manufactured by Messrs. Elkington.

692. Reduction of Panel by Donatello, in repoussé silver.

693. Top of Lady's Handkerchief-Box, in repoussé silver.

694. Reduction of Figure by Scopas in repoussé silver.

695. Three Plaques, repoussé, "Jephthah's daughter going out to meet her father," "Boy and Eagle," and "Birds fighting."
Executed by Thomas Spall, *Birmingham.*
Manufactured by Messrs. Elkington.

696. Two Silver Panels, repoussé work.
Designed and executed by F. Harper, *Birmingham.*
Manufactured by Messrs. Elkington & Co., *Birmingham.*

697. Silver Gilt Tazza, engraved and chased.
Designed by Frank Jackson, *Birmingham.*
Manufactured by Messrs. Elkington & Co., *Birmingham.*

698. Vase, with Cover and Handles, Silver, Italian Renaissance style.
The body of the Vase is divided architecturally into four panels, two of which are occupied by Limoges Enamel, representing the triumph of Poseidon, and the birth of Aphrodite; the other two smaller ones are filled in with ornamental details in repoussé.
On the lower part of the calyx of the Vase are Limoges enamel medallions, containing nautical and other emblems. The handles are composed of rich scrolls, on the top of which are seated youthful winged figures supporting the lip of the Vase, from the termination of the scrolls depend festoons of shells and sea-weed.
The cover is decorated with shell and pearls and surmounted by a knob composed of foliated figures holding up a vase-like form.
The whole is supported by an architectural stem decorated with figures.
Designed by Frank G. Jackson, *Birmingham.*
Figures *modelled by* Challen Beattie, *Stoke-upon-Trent and South Kensington.*
Limoges Enamel Plaques, &c., *painted by* Miss Rosa Wallis, *South Kensington.*
Manufactured by Messrs. Elkington & Co., *Birmingham.*

699. Silver Mounted Claret Jug. Six Silver Coffee Spoons, Sugar Tongs. Silver Mounted Sugar and Cream Stand. Two Fruit Spoons and Sugar Sifter. Marmalade Dish and Spoon. Silver Mounted Salad Bowl. Card Basket. Cream Jug. Silver Mounted Tray and Silver Salt Cellars. Milk Jug and Sugar Bowl, Wedgewood, silver mounted. Tea Kettle and Spirit Lamp. Cake Basket, Fish Knives and Forks, Salt Spoons, Caddy Spoons, Grape Cutters, and Dinner Forks. Silver Gilt Jewel Box. Silver Breakfast Cruets, Silver Fish Servers, with ivory handles, Silver Fish Servers, and Silver Gilt Fruit Spoons.
Designed and manufactured by Jehoiada Rhodes, *Sheffield.*

700. Silver Gilt Dessert Service, seven pieces.
Designed by Sir Noel Paton, R.S.A., Illustrative of Shakespeare's play of the "Tempest."
Modelled by Alexander Crichton, 22, *Great Sutton-street, Clerkenwell, Edinburgh (School of Art).*
Manufactured by Messrs. Mackay and Cunningham, *Edinburgh* (lent by John Polson, Esq.).

701. Silver Tea Pot.
Sugar Basin.
Cream Ewer, in form of nautilus shell, £35.

702. Four Light Branch Candelabra, Silver Gilt, £120.

703. One Centre Piece for fruit and flowers, £50.

704. Two Dishes for fruit, £32 each.

705. Four Dishes for fruit, £16 each.
Designed and modelled by J. Crichton, *Edinburgh.*
Manufactured by Mackay & Chisholm, 57 *Princes Street, Edinburgh.*

706. Silver Tea Pot.
Designed by Richard Lunn, *Sheffield.*
Manufactured by Jehoiada Rhodes, *Sheffield.*

707. Three sets of Fruit Spoons and Sugar Sifters, silver and silver gilt; three sets of Salt Cellars and Spoons, silver and silver gilt; Two pairs of Fish Servers.
Designed and manufactured by Nicholas Bray, *Sheffield.*

708. Apostle Toast Rack.
Designed by Henry Pearce, *Hull.*
Manufactured by Henry Pearce, *Huddersfield.*

709. Copper Gilt Flagon with Cover.
Designed and executed by E. W. Clayton, *Sheffield.*
Lent by Sir Philip Cunliffe Owen, K.C.M.G., &c., &c.

710. Pair of Buffalo Horns, mounted in silver, with silver gilt receptacle for holding flowers, £120.
Designed by Thomas Holiday, *Edinburgh.*
Manufactured by Messrs. Mackay & Chisholm, *Edinburgh.*

711. Case containing Silver and Silver-Gilt Fish Carvers, Fish-Eaters, Dessert Knives and Fruit Spoons.
Designed and manufactured by E. L. Thompson, *Sheffield.*

712. Scotch Ram's Head, silver mounted, as Snuff and Cigar Box, set with Scotch Cairngorms.
Designed by Henry B. Kirkwood, *Edinburgh.*
Manufactured by Henry B. Kirkwood, *Edinburgh.*

713. Two Silver Cups in repoussé work, Salver in repoussé work, Jewel Box, with Bronze Panels in repoussé; Silver Coffee Canister, chased; Silver Bell, engraved.
Designed and executed by George Norton, *Sheffield.*

714. Rose Water Dish and Ewer in Plaster. Illustrative of the Ancient Mariner.
Designed by H. W. Hogg, *Derby.*

715. Modelled Design for a Loving Cup and Cover, silver panel gilt. The property of the Clothworkers' Company.
The whole *designed, modelled and cast by* Richard Lunn, *Derby and South Kensington.*
Lent by the South Kensington Museum.

716. Model for Salver.
Designed by Richard Lunn, *Sheffield and South Kensington.*

717. Model in plaster for Plaque.
Designed by A. Austin, *Derby.*

718. Model in plaster of Casket.

719. Model in wax for card tray.
Designed and modelled by W. Marshall, *Sheffield and South Kensington.*

720. Model of Silver Cup.
Designed and modelled by E. Thickett, *Sheffield.*

721. Silver Panel, chased and engraved.
Designed by R. Price, *Charterhouse.*

722. Silver Tankard, repoussé work
Designed by T. T. Freeman, *Manchester.*
Manufactured by Freeman & Collier, *Manchester.*

723. Engraved Waiter, Renaissance style.
Designed by James Menses, *Edinburgh.*
Manufactured by Hamilton, Crichton & Co., *Edinburgh.*

724. Photograph of Gold Key.
Designed by Edwin Seward, R.C.A., *Cardiff.*

725. Presentation Inkstand, in silver. Presented to General Lord Wolseley.
Designed and executed by G. M. Kirtland, *South Kensington.*
Manufactured by Messrs. J. & H. Garrard, *Haymarket, London.*
Lent by General Lord Wolseley.

726. Group of Figures, in silver, representing Don Quixote and Sancho Panza the "Steward's Cup," Goodwood.

727. Silver Group, modelled from life, representing mare and foal, with two panels. Lent by Sir John Astley.
Designed by G. A. Carter, *Lambeth.*
Manufactured by Hunt & Roskell, *Bond Street.*

728. Group of Figures, in silver, representing King John signing Magna Charta.
Designed by G. A. Carter, *Lambeth.*
Manufactured by Hunt & Roskell, *Bond Street.*
Lent by J. D'Aguilar Samuda, Esq.

729. Silver Vase.
Designed by T. Swaffield Brown, *Finsbury.*
Manufactured by Messrs. Hunt & Roskell, *Bond Street.*

730. Testimonial, in silver (four pieces). Presented to Thomas Hawksley, Esq., C.E., F.R.S.
Designed by T. Swaffield Brown, *Finsbury.*
Manufactured by Messrs. Hunt & Roskell.
Lent by Thomas Hawksley, Esq., C.E., F.R.S.

731. Claret Jug, mounted in silver gilt.
Designed by Miss Ellen K. Cracknell, *Yarmouth.*
Manufactured by Messrs. Hunt & Roskell.

732. Metal Gilt Clock, representing the death of King Arthur.
Designed by C. P. Slocombe, *Spitalfields and Somerset House.*
Manufactured by E. White.

733. The Magdala Trophy, silver and silver gilt.
Designed by C. P. Slocombe, *Spitalfields and Somerset House.*
Manufactured by Messrs. Elkington, *Birmingham.*
Lent by the Officers of the 1st Battalion of the King's Own Royal Regiment.

734. Silver Shield, repoussé.
The design is illustrative of a description of a shield in Virgil's Æneid, Book VIII.
The centre represents the Naval Battle of Actium, encircled by a border of Deities favourable to the opposing forces, surrounding which are twelve panels illustrating the following incidents:—
1. Romulus and Remus, with the Tiber in the foreground.
2. The Rape of the Sabines.
3. The Sabine War.
4. The Treaty with the Sabines.
5. The Death of Nictius.
6. Horatius Cocles defending the Bridge.
7. Manlius defending the Capitol against the Gauls.
8. A Sabine Procession.
9. The Lower Regions.
10. Triumph of Cæsar.
11–12. The Conquered Nations brought to Rome.
Designed by John Watkins, *Birmingham and South Kensington.*
Chased by Thomas Spall, *Birmingham.*
Manufactured by Messrs. Elkington & Co., *Birmingham.*

735. Original design and drawing of the above shield *designed and executed by* John Watkins, *Birmingham and South Kensington.*
Lent by the South Kensington Museum.

736. Design for Five-light Silver Candlestick.
By A. Winterbottom, *Sheffield.*

737. Design for Five-branch Candlestick.
By J. Mackenzie, *Belfast.*

738. Design for Five-light Candlestick and Seven-light Candlestick.
By John Bradburn, *Coalbrookdale.*

739. Design for Silver Fruit Dish and Tankard.
By Edwin Jarratt, *Coalbrookdale.*

740. Design for Silver Tea Kettle and Stand, and Silver Salad Bowl.
By Robert Needham, *Sheffield.*

741. Design for Flagon, in gold and silver.
742. Design for Chalice, in gold and silver.
By Stuart Thorpe, *Sheffield.*

743. Four Frames, Design for Centre Pieces, Tazzas, &c.
By W. F. Randall, *Stroud and Gloucester.*

744. Design for Centre Piece and Tea Kettle.
By Thomas Smith, *Coalbrookdale.*

745. Design for The Republic Shield.
By Henry Tidmarsh, *West London.*

746. Design for Loving Cup, Dagger Handles and Sheaths.
By Frederick Fidler, *Sheffield.*

747. Design for Loving Cup.
By Wm. McGowan, *Belfast.*

748. Design for Soup Tureen and Dinner Dish.
By Richard Lunn, *Sheffield.*

749. Design for Loving Cup, presented to Alderman Hadley.
By G. E. Tucker, *West London.*

750. Design for Salt Cellars.
By A. A. Peace, *Sheffield.*

751. Designs for two Candelabra, Tea Kettle, Tankard, Claret Jug, and Mirror Frames.
By J. A. Sherlock, *Warrington and South Kensington.*

752. Design for Silver Salt Cellar and Spoons.
By O. R. Albrow, *Great Yarmouth.*

753. Design for Clock and Candlesticks.
By W. H. Banks, *Rotherham.*

754. Design for Silver Scissors and Sheaths.
By G. Mackenzie, *Sheffield.*

755. Photographs of Silver Cups.
Designed by Henry Archer, *Sheffield.*

756. Design for Silver Salad Bowl.
By J. Thomas, *Westminster.*

757. Design for Gold Casket.
By T. Walter Wilson, for H.R.H. The Prince of Wales.
Manufactured by Messrs. Garrard & Co.

758. Design for Gold and Jewelled Casket.
By T. Walter Wilson, presented to H.I.M. The Emperor of Russia.
Manufactured by Benson & Son, *Ludgate Hill.*

759. Plaster Model of Shield.
Designed and modelled by Owen Gibbons, *South Kensington and Cirencester.*

SECTION VII.

Jewelry and Personal Ornaments. Gold, Silver, Plated, or in any suitable Materials. Medals, Seals, and Fans.

760. Gold Bouquet Holder, presented to H.R.H. the Princess of Wales, by the Mayor of Swansea, in October, 1881 enamelled and jewelled. Decoration entirely composed of emblematic and nautical devices; red dragon of Wales at sides, with arms of Princess.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
(Lent by H.R.H. the Princess of Wales.)

761. Gold Chatelaine, presented to H.R.H. the Princess of Wales, by the Swansea Harbour Trust, on the ceremony of naming the new Dock, October, 1881. Set with diamonds, rubies, pearls and turquoises. All decoration and appliances designed in reference to the occasion.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
(Lent by H.R.H. the Princess of Wales.)

762. Spade, silver and ivory, enamelled and parcel-gilt. Presented by the ladies of Leicester to H.R.H. the Princess of Wales, on planting a tree in the Abbey Park. 29 May, 1882.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by S. Blanckensee & Son, *Birmingham*
(Lent by H.R.H. the Princess of Wales.)

763. Gold Key, Gothic style, presented to H.R.H. the Prince of Wales, on the occasion of his opening the Abbey Park, Leicester, with enamelled Arms of Prince and of Borough, oak device, King Charles' Day, 1882.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by S. Blanckensee and Son, *Birmingham.*
(Lent by H.R.H. the Prince of Wales, K.G.)

764. Suite of Jewellery, 22-carat gold. Collarette containing fifteen repoussée plaques, illustrating the arts of drawing and design, Italian foliated borders, pendant illustrating sculpture, bracelet and earrings indicating painting and music.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. and J. Bragg, *Birmingham.*
(Lent by Mrs. Thos. Dix Perkin.)

764*a*. Brooch and Silver Gilt Muffineer.
Designed and executed by Harry Stapleton, *St. Martin's.*

765. Silver Mace, presented to West Bromwich Corporation, by Mr. Alderman R. Farley, First Mayor, with heraldic and civic decoration.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. and J. Bragg, *Birmingham.*
(Lent by the Corporation of West Bromwich.)

766. Mayoral Gold Chain and Badge, Stoke-upon-Trent, enamelled Arms of Borough, Crest, Moth and Civic Devices. Presented to the Borough by Mr. Colin Minton Campbell, J.P. in 1875.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
(Lent by the Corporation of Stoke-upon-Trent.

767. Mayoral Chain and Badge, Rotherham, 18-carat gold. Badge entirely wrought and carved gold work, various enamelled shields, emblems, and local references. Arms of Earl of Effingham, Lord of Manor, on centre link. Heraldic bearings of successive mayors and borough devices on side links of chain, initial letter of borough forming connection.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
(Lent by the Corporation of Rotherham.)

768. Silver Key with Gold and Enamelled Arms, presented to Rt. Hon. John Bright, M.P., on opening "Cobden" Coffee House, Birmingham, August, 1883. Style Gothic, column, enriched capital, head trefoil form, crocketed. Arms of Birmingham, surmounted by civic crown.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
(Lent by the Rt. Hon. John Bright, M.P.)

769. Gold Belt—subject: "The 12 Months," a story of the year. The belt is composed of a series of plaques chased in repoussé, and between each plaque a flower characteristic of the month which it follows.
Designed and executed by G. A. Carter, *Lambeth.*
Manufactured by Messrs. Hunt & Roskell, *New Bond Street.*

. Sword of Honour, presented to Sir Archibald Alison, K.C.B.,&c.
Designed by W. J. Milwain, *Glasgow.*
Manufactured by G. Edwards & Sons, *Glasgow-*
Lent by Sir Archibald Alison, K.C.B.)

771. Seals for City of Bangor, and Boroughs of Accrington and Bacup, arranged for wax and paper respectively. Accrington, vesica shaped. Bangor City Seal in quatrefoil design. Bacup two modes of treatment, bold for wax impression, other in low relief for paper.
Designed by J. W. Tonks, *Birmingham.*

772. Pierced and Engraved Silver-mounted Dirk, with Cairngorm handle, Sgian-Dhu to match, Sporran to match.

773. Pierced and Engraved Silver-mounted Dirk, Celtic ornament with fine brown Cairngorm handles, Brooch and Sporran to match, Waistbelt with pierced silver bosses and centre plate.

774. Antique Dirk, engraved silver mountings, gold bosses. Antique Sporran of Otter Skin, with engraved silver mountings, tooled leather front, gold bosses, and plaited leather tassels.

775. Pierced and Engraved Silver-Mounted Dirk, Celtic ornament, antique carved ivory handles, gold studs.

776. Pierced and Engraved Silver-Mounted Sporran, of ermine, with silver tassels and pierced silver-covered crystal bosses.

777. Pierced and Engraved Silver-Mounted Sgian-Dhu, with buckhorn handle, topaz in top.

778. Pierced and Engraved Silver-Mounted Sgian Dhu, with Cairngorm handle.
Designed and executed by H. B. Kirkwood, *Edinburgh.*

779. Gold-Mounted Fob and Seal.
Designed and executed by Henry Pearce, *Sheffield.*

780. Six Gold Watch Cases.
Designed by Walter Scott, Thomas Baker, C. H. Everington, James Friday, *Coventry.*
Engraved by B. A. Hall, *Coventry.*
Manufactured by Messrs. Rotherham.

781. Frame containing Six Medals.
1. David Roberts, R.A. Bronze.
2. Reverse of No. 1. Bronze.
3. Thomas Carlyle. In commemoration of his 80th birthday. Bronze.
4. Captain Francis Fowke, R.E. Bronze.
5. Reverse of No. 4. Bronze.
6. Henry Bessemer. Bronze.

Frame containing Fifteen Medals.

1. David Cox. Bronze.
2. Reverse of No. 1. Bronze.
3. Rutherford B. Hayes, 1875. Bronze.
4. Rutherford B. Hayes, 1877. Bronze.
5. First Prize Army Division, United States, for marksmanship. Bronze.
6. Art Treasures and Industrial Exhibition of North Wales. Bronze.
7. Madam Parepa-Rosa.
8. Rutherford B. Hayes (oval). Bronze.
9. Medal given by the Assay Commission of the United States Mint, Philadelphia. Bronze.
10. National Exposition of Railway Appliances, Chicago. Bronze.
11. Joseph E. Temple. Lead.
12. Reverse of No. 11. White metal.
13. Coin. Copper.
14. Reverse of No. 13. Copper.
15. James A. Garfield. White metal.

Designed and executed by George T. Morgan, *Chief Medallist United States Mint, Birmingham and South Kensington.*

782. Necklace and Pendant, gold, set with jewels.
Designed by T. Walter Wilson, *South Kensington.*
Manufactured by Messrs. Garrard for H.R.H. the Prince of Wales.

783. Design for Necklace and Pendant, in gold, enamelled and jewelled, with cameos representing Apollo and the Muses.
Designed by T. Walter Wilson, *South Kensington.*

784. Design for Watch Cases.
By John Frost, *Coventry.*

785. Design for Watch Cases.
By James Friday, *Coventry.*

786. Frame of Designs for Watch Cases.
By H. Baynton, *Coventry.*

787. Frame of Designs for Watch Cases.
By Walter Scott, *Coventry.*

788. Frame of Designs for Watch Cases.
By John J. Trego, *Coventry.*

789. Frame of Design of Jewellery,
By Miss Marianne Mansell, *Lambeth*

790. Six Frames of Photographs of Mayor's chains of office of the Corporations of Stockport, Accrington, Neath, Swansea, Kidderminster, Walsall,
Designed by J. William Tonks, *Birmingham.*
Manufactured by Messrs. H. and J. Bragg, *Birmingham.*

791. Two Frames of Designs of Mayors' Chains of Office of the Corporations of Swansea and Rochester.
Designed by T. William Tonks, *Birmingham.*
Manufactured by Messrs. H. and J. Bragg, *Birmingham.*

792. Design for Album Cover.
By T. W. Tonks, *Birmingham.*
Manufactured by Messrs. H. and J. Bragg, *Birmingham.*

793. Design for Fan, painted on Silk, Apple Blossoms and Cupids.
Designed and executed by Ethel C. Nisbet, *Bloomsbury.*
(Lent by H.R.H. The Duchess of Albany.)

794. Design for Fan, water colours on vellum, "The Feast."
By Henrietta Montalba, *South Kensington.*
(Lent by South Kensington Museum.)

795. Design for Fan, water colour on vellum, "La Grace."
By Hilda Montalba, *South Kensington.*
(Lent by South Kensington Museum.)

796. Design for Fan.
By Mrs. Eassie, *Gloucester.*

797. Design for Fan, painting on Silk.
By A. L. West, *Bloomsbury.*

797*a*. Frame of Designs for Jewellery.
By J. J. Oxer, *Lambeth.*

SECTION VIII.

Furniture and Wood Carving. Inlaid Wood. Parqueterie. Papier Maché Ware, etc.

798. Box, carved oak.
Designed and executed by Henry Archer, *Sheffield.*

799. Carved Coin Cabinet, in imitation of 16th Century Work.
Designed and Carved by George Norton, *Sheffield.*

800. Richly Carved Sideboard in Italian Walnut, 16th Century Style.
Designed and Carved by William Allwright, *West London.*
Manufactured by Messrs. Holland.
(Lent by Sir Richard Wallace, Bart.)

801. Carved Oak Hall Seat, seat and back covered with embossed leather.
Designed by Thomas Finchett, *Manchester.*
Manufactured by Messrs. Kendal Milne & Co., *Manchester.*
(Lent by John Lomax, Esq.)

802. Sideboard, with carved panels, mouldings, &c.
Designed by Richard Pinches, *Chester.*
Manufactured by Messrs. W. & F. Brown & Co., *Chester.*

803. Four Specimens of Wood Mosaics for Floors. No curved lines can be used and the choice of colours is limited to those afforded by the natural shades of the woods.
Designs by Richard Pinches, *Chester.*
Manufactured by Messrs. W. & F. Brown & Co., *Chester.*

804. Table Top, inlaid wood.
Designed by E. J. Millward, *Kendal.*
Manufactured by A. J. Millward.

805. Solid Spanish Mahogany Sideboard, relieved by black moulding.

806. Octagonal Table Top, Parqueterie.

807. Solid Walnut Cabinet, with black moulding, with bevelled glass panels to door.
Designed and executed by Gunston Tite, *South Kensington.*

808. Elizabethan Coffer with draw in base.
Designed and executed by Frank Boucher, *Kensington.*

809. Cabinet, Coal Scuttle, Small Table, and Waste Paper Box.
Designed and executed by J. E. A. Brown, *Cirencester.*

810. Two Cabinets made of unstained oak.
Designed by W. Alderton, *Brighton.*
Manufactured by H. Alderton, *Brighton.*

811. American Walnut Wardrobe.

812. Commode and Chair.

813. Mahogany Sideboard with mirror back.

814. Mahogany Wardrobe with mirror front.

815. Mahogany Dressing Table, with bevelled mirror.

816. Mahogany Washstand with marble top.

817. Two Mahogany Chairs, stamped leather.
Designed by Thomas Dewson.
Manufactured by E. Goodall & Co., *Manchester.*

818. Cabinet Side-Board, Carved Oak.
Designed and executed by Nathaniel Long, *Cork.*

819. Carved Oak Chair.
Designed and executed by E. Moody, *Huddersfield.*

820. American Walnut Music and China Cabinet.
Designed by Sydney Haward, *South Kensington.*
Manufactured by J. A. Harward, *Darlington.*

821. Screen Fourfold, Painted Tapestry.
Designed and executed by Francis Horsman, *Leeds.*

822. Portion of Carved Teak Wood Mantelpiece, Fruit and Leaves, Carved Circular Panel in Sycamore Wood.
Designed and executed by Miss Girardot, *Farnham.*

823. Two Panels of Lime Wood, carved in high relief.
Executed by James Minns, *Norwich.*
(Lent by B. E. Fletcher, Esq., Norwich.)

824. Copy of Eighteenth Century Carved Mantelpiece (English). The original in the South Kensington Museum. Price £55.
Executed by the Students of the School of Art Wood Carving, *Albert Hall.*
The Grate and Fittings by Messrs. Longden.
The Marble Slips by Mr. Sinclair.

825. Carved Oak Frame. Copy of Italian Frame in the South Kensington Museum. Price £5 5s.
Executed by D. Chisholm, *School of Art Wood Carving, Albert Hall.*

826. Three Pairs of Carved Walnut Sconces. Price £4, £5, £6.
Executed by Miss M. E. Reeks. *Assisted by* Signor Bulletti and Miss Rowe, *School of Art Wood Carving, Albert Hall.*

827. Bellows, Carved in Italian Walnut, Original in the South Kensington Museum. Price £10 10s.
Executed by Miss M. E. Reeks, *School of Art Wood Carving, Royal Albert Hall.*

828. Bellows, Carved in Italian Walnut. Copied from a pair in the South Kensington Museum. Price £12.
Executed by Miss H. E. Wahab, *School of Art Wood Carving, Royal Albert Hall.*

829. Carved Panel.
Executed by C. H. Walton, *School of Art Wood Carving, Royal Albert Hall.*

830. Carved Panel.
Executed by Miss Smith, *School of Art Wood Carving, Royal Albert Hall*

831. Carved Panel.
Executed by W. Page, *School of Art Wood Carving, Royal Albert Hall.*

832. Panel in American Walnut, copied from a Flemish panel now in the South Kensington Museum. Price £6 6*s*.
Executed by Miss Henrietta E. Wahab, *School of Art Wood Carving, Royal Albert Hall.*

833. Large Carved Panel.
Executed by the Students of the School of Art Wood Carving, *Royal Albert Hall.*

834. Architectural Moulding.
Executed by Horace L. Montford, *School of Art Wood Carving, Royal Albert Hall.*

835. Copy of 18th century Moulding.
Executed by Miss J. C. Holt, *School of Art Wood Carving, Royal Albert Hall.*

836. Copy of 18th century Moulding.
Executed by Miss Smith, *School of Art Wood Carving, Royal Albert Hall.*

837. Sample Mouldings of Picture Frame carved and gilded.
Executed by the Students of the School of Art Wood Carving, *Royal Albert Hall.*

838. Carved Hall Seat in American Walnut.
Executed by Wm. Page, Miss M. L. Irwin, and Miss M. E. Reeks. Price £18. *School of Art Wood Carving, Royal Albert Hall.*

839. Carved Wooden Box.
Designed and executed by Miss A. Howitt, *Sheffield.*

840. Two carved Oak Panels, and Flowers on Stand.
Designed and executed by William Martin, *Edinburgh.*

841. Carved Walnut Panel.
Executed by E. M. Moore, *Southampton.*

842. Carved Panel.
Executed by Robert Smith, *Inverness.*

843. Carved Panel.
Executed by J. W. Bush, *Bath.*

844. Carved Bracket.
Executed by J. T. Ogleby, *Sunderland,* Price £10 10*s*.

845. Small Circular Panel.
Executed by E. Lock, *Bath.*

846. Specimen of Carved Oak.
Executed by H. Frith, *Gloucester.*

847. Picture Moulding, carved and gilt.
Executed by Miss B. Alcock, *Manchester.*

848. Painted Girandole and Panel.
Designed and executed by W. J. Tatham, *West London.*

849. 2 Blotting Books.
Designed and executed by J. E. A. Brown, *Cirencester.*

850. Tea Caddy, inlaid with different coloured woods.
Designed and executed by Gunston Tite, *South Kensington.*

851. Two American Walnut Wood Panels.
Executed by J. J. Clów, *Exeter and Barnstaple.*

852. Panel of Madonna and Child.
Executed by Miss Jane Biram, *Sheffield.*

853. Carved Oak Panel.
Executed by Miss S. E. M. Cook, *Sheffield.*

854. Carved Mantelpiece.
Designed by H. Longden, *Sheffield.*
Manufactured by Messrs. Longden, *Sheffield.*

855. Design for Bay of Music Room.
By John Briggs, *Edinburgh.*

856. Design for Fireplace and over mantel.
By W. H. Banks, *Rotherham.*

857. Design for Cabinet.
By W. Scott Morton, *Glasgow and South Kensington.*

858. Design for Side of Small Dining Room, Sideboard, Chairs, &c.
Library with Wall, Panelling, &c.
By W. F. Randall.
Manufactured by Messrs. Howard & Sons, *London.*

859. Design for Cabinet.
In pen and ink by E. P. Milne, *Lancaster.*

860. Coloured Photograph of Oak Cabinet.
Designed by E. P. Milne, *Lancaster.*
Executed by Messrs. Appleyard & Sons, *Sheffield.*

861. Design for Cabinet.
By George Ilston, *Sheffield.*

862. Photographs of Tables, Screens, and Chairs.
Designed by Frederick Muntzer, *South Kensington.*
Manufactured by Messrs. Cowtan & Sons, *Oxford Street.*

863. Design for Sideboard.
By F. Leighton, *Coalbrookdale.*

864. Design for Carved Oak Sideboard.
By A. D. McCormick, *Belfast.*

865. Design for Inlaid Cabinet.
By E. P. Milne, *Lancaster.*

866. Two Designs for Cabinets.
By John Knight, *Nottingham.*

867. Three Photographs of Cabinets and Sideboard.
Designed by E. P. Milne.
Executed by Messrs. Milne & Sons, *Lancaster.*

868. Tinted Photograph of Mirror Frame and Piano.
Designed by Frederick Müntzer, *South Kensington.*
Manufactured by Cowtan & Sons, *Oxford Street.*

869. Coloured Drawing of Sideboard.
Designed by E. P. Milne, *Lancaster.*

870. Cabinet.
Designed by Frederick Müntzer, *South Kensington.*
Manufactured by Cowtan & Sons, *Oxford Street.*

871. Design for Cabinet.
By F. Müntzer, *South Kensington.*

872. Cabinet with Divan Seat and Wall Decorations.
Designed by W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

873. Design for Rosewood Cabinet and Rosewood Mantelpiece.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

874. Photograph of Side board in English Oak.
Designed by George Read, *Leeds.*
Executed by Roodhouse & Sons, *Leeds.*

875. Two Designs for Sideboards.
By John Knight, *Nottingham.*

876. Four Designs for Sideboards.
By C. J. Beaupré, *West London.*
Manufactured by Lilley & Wood.

877. Designs for Sideboard, Dado, and Chairs.
By Robert Walker, *Edinburgh.*

878. Photograph of Chimney Nook.
Designed by W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

879. Two Photographs of Mantel and over Mantel in Oak.
Designed by R. G. Robertson, *Kilmarnock.*
Manufactured by R. C. Robertson, *Kilmarnock.*

880. Water Colour Drawing of Fire Place, Mantel and over Mantel, and Wall Decoration.
Designed by A. Weatherstone, *West London.*
Manufactured by Howard & Sons.

881. Design for Mantel and over Mantel.
By James Heron, *Edinburgh.*

882. Design for Mantel and over Mantel.
Design for Buffet.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

883. Photograph of Rosewood Cabinet.
Designed by W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

884. Design for Oak Sideboard and Oak Panelling.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

885. Design for Buffet.
By W. F. Randall, *Stroud and South Kensington.*

886. Design for Sideboard.
By C. C. Allen, *West London.*

887. Design for Mantel and over Mantel.
By W. F. Randall, *Stroud and South Kensington.*

888. Design for inlaid Table Top.
By Ella Jacob, *Salisbury.*

889. Design for Fireplace with over Mantel.
By Thomas Smith, *Coalbrookdale.*

890. Design for Mantel, over Mantel, and ado.
By Alfred Carpenter, *West London.*

891. Design for Inlaid Box.
By Miss Edith E. Rogers, *Westminster and Lambeth.*

892. Design for side of Library.
By E. P. Milne, *Lancaster.*

893. Design for Mantel, over Mantel, and ookcase.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

894. Design for Mantel and over Mantel.
By C. A. Allom, *West London.*

895. Design for Panel.
By W. S. Watson, *South Kensington.*

896. Design for Inlaid Mirror.
By J. F. Boyle, *Dublin.*

897. Design for Mantel, over Mantel, and Wall Decoration.
By H. Thornton Garner, *West London*

898. Photograph of Mantel and over Mantel in Library.
Designed by E. Page Turner, *Sheffield.*

899. Design for Mantel and over Mantel
By G. Tucker, *West London.*

900. Design for Billiard Table.
By G. Tucker, *West London.*

901. Design for Rosewood inlaid Bedroom Suite.
By F. C. Norris, *Bath.*

902. Design for Franklin Testimonial.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

903. Design for Chimney Nook.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

904. Design for Ingle Nook in Dining Room.
By W. F. Randall, *Stroud and South Kensington.*
Manufactured by Howard & Sons.

905. Design for Doorway.
By Austin Winterbottom, *Sheffield.*

906. Two Designs for Staircases.
By J. G. Edwards, *Sheffield.*

907. Design for Fireplace and over Mantel.
By Walter Platt, *Great Yarmouth.*

908. Design for Fireplace and over Mantel.
By J. Rowley, *West London.*

909. Design for Inlaid Border.
By P. K. Symes, *Dublin.*

910. Design for Inlaid Work.
By W. B. Cockrill, *Great Yarmouth.*

911. Design for Inlaid Border.
By O. R. Albrow, *Great Yarmouth.*

912. Design for Inlaid Border.
By Mary Lloyd, *Dublin.*

913. Design for Inlaid Border.
By T. C. Bergins, *Dublin.*

SECTION IX.

Decorative Carvings in Stone or Marble, and Plastic Decorations, &c.

914. Decorative Panel in Plaster.
By S. R. Canton, *Bloomsbury.*

915. Large Panel in Plaster. Figure subject.
Designed and executed by S. R. Canton, *Bloomsbury.*

916. Plaster Cantilever.
Designed and executed by Mark Rogers, *Lambeth.*

917. Figure of Warrior.
Designed and modelled by W. B. Rhind, *Edinburgh.*

918. Figure in Plaster.
Designed and modelled by W. B. Rhind, *Edinburgh.*

919. Design for Cantilever in Plaster.
By John A. Evans, *Gloucester.*

920. Support for side of Fireplace.
Designed and modelled by Mark Rogers, *Lambeth.*

921. Panel Design, in plaster.
Designed and modelled by John Fisher, *South Kensington.*

922. The Dead Christ.
Designed and modelled by W. B. Rhind, *Edinburgh.*

923. Frieze.
Designed and modelled by A. W. Bowcher, *South Kensington.*

924. Panel.
Designed and modelled by H. Tyzack, *Sheffield.*

925. Decorative Panel.
Designed and modelled by A. J. Davey, *Torquay.*

926. Group in plaster, "Jacob wrestling with the Angel."
Designed and modelled by O. Junck, *West London.*

927. Panel, "Blacksmith at Work."
Designed and modelled by A. W. Bowcher, *South Kensington.*

928. Panel, "Christ before Pilate."
Designed and modelled by W. B. Rhind, *Edinburgh.*

929. Design for a doorway, &c.
Designed and modelled by R. Rhodes, *South Kensington.*

930. Design for a doorway, &c.
Designed and modelled by A. Whitehead, *South Kensington.*

931. Design for a Fountain.
Designed and modelled by A. W. Bowcher, *South Kensington.*

932. Panel, after Albert Dürer.
Modelled by George Morgan, *South Kensington.*

933. Decorative Panel, and in plaster.
Designed and modelled by John E. Taylorson, *Lambeth.*

934. Head.
Modelled by Mark Rogers, *Lambeth.*

935. Panel.
Designed and modelled by Richard Ferris, *Westminster.*

936. Figure of a Warrior.
Designed and modelled by T. S. Burnett, *Edinburgh.*

937. Figure of a Warrior.
Designed and modelled by T. S. Burnett, *Edinburgh.*

938. Christ in the Temple.
Designed and executed in stone by J. J. Millson, *Manchester.*

939. Design for Bay of Music Room.
By Margaret A. Heath, *Gloucester.*

940. Design for Bay of Music Room.
By G. W. Shepherd, *Coalbrookdale.*

941. Model in plaster of frieze for a Fireplace, renaissance.
Designed and modelled by G. Wilson, *Westminster.*

942. Three Frames, containing Photographs of Sculpture.
Designed and executed by S. Ruddock, *Marlborough House and South Kensington.*

943. Two Frames, containing Photographs of portions of Terra-Cotta columns.
Designed and executed by Godfrey Sykes, *South Kensington.*

944. Three Frames, containing Photographs of Panels, for The Wedgewood Institute.
Designed and modelled by R. J. Morris, *South Kensington.*

945. Model of a Tomb.
Designed and executed by Wm. Firth, *Lambeth.*

946. Group in plaster, "Boadicea."
Designed and modelled by Wm. Firth, *Lambeth.*

947. Photograph of an Altar-piece.
By Samuel Ruddock, *Marlborough House and South Kensington.*

948. Photograph of Stone Carving.
Designed and executed by H. Bates.

949. Frame, containing autotypes of designs in plaster.
By G. Bedford, *Torquay;* R. Lane, *Glasgow;* F. Gibbons, *Cirencester;* and W. Marshall, *Kensington.*

SECTION X.

Lace. — Point, Pillow, and Machine made Lace. Drawings and Photographs of such as may have been executed.

950. Five Lace Curtains.
Designed by Wm. Coates, *Nottingham.*
Manufactured by Heymann & Alexander, *Nottingham.*

951. Lace Bed Cover.
Designed by Wm. Coates, *Nottingham.*
Manufactured by Heymann & Alexander, *Nottingham.*

952. Lace Bed Cover and Curtain.
Designed by Samuel W. Oscroft, *Nottingham.*
Manufactured by Heymann & Alexander, *Nottingham.*

953. Six Lace Curtains.
Designed by Samuel W. Oscroft, *Nottingham.*
Manufactured by Heymann & Alexander, *Nottingham.*

954. Lace Curtain.
Designed by Gavin Morton, *Kilmarnock.*
Manufactured by Messrs. Morton & Co., *Darwell.*

955. Two Lace Curtains.
Designed by Arthur Jennings, *Nottingham.*
Manufactured by Hamel & Wright, *Nottingham.*

956. Two Lace Curtains.
Designed by Geo. E. Drake, *Halifax.*
Manufactured by Carey & Sons, *Nottingham.*

957. Two pairs of Lace Curtains.
Designed by George Broadhead, *Nottingham.*

958. Two Lace Curtains.
Designed by Thomas W. Hammond, *Nottingham.*
Manufactured by Hamel & Wright, *Nottingham.*

959. Machine-made Lace Curtain.
Designed by W. R. S. Hancock, *Nottingham.*
Manufactured by M. Jacoby & Co., *Stoney St., Nottingham.*

960. Six specimens of Irish Crochet Work.
Designed by Michael Holland, *Lough Road, Cork.*

961. Design for Irish Crochet Work.
By Michael Holland, *Lough Road, Cork.*

962. Specimen of Lace.
From Dublin Museum of Science and Art.

963. Two designs and three executed specimens of Irish Crochet.
By Miss Ellen Hayes, *Industrial School, Ursuline Convent, Cork.*

964. Two designs and three executed specimens of Irish Crochet.
By Miss Eliza Meade, *Industrial School, Ursuline Convent, Cork.*

965. Design for Lace Curtain.
By Thomas Meldrum, *Nottingham.*

966. Two designs for Honiton Point Lace.
By Miss M. Joyce, *Dover.*

967. Three designs for Lace Curtains.
By W. R. Walton, *Nottingham.*

968. Two frames of photographs of designs for Lace.
By George Lees, *Kidderminster.*

969. Three Designs for Lace.
By Miss Marianne Mansell, *Lambeth.*

970. Design for Lace Curtain.
By William Hardy, *Nottingham.*

971. Design for Lace Curtain.
By William Hardy, *Nottingham.*

972. Design for Lace Curtain.
By Thomas William Hammond, *Nottingham.*

973. Design for Lace Curtain.
By Thomas William Hammond, *Nottingham.*

974. Three Designs for Lace.
By Miss A. Dickeson, *Dover.*

975. Design for Lace Curtain.
By Thomas F. Travell, *Nottingham.*

976. Design for Lace Curtain.
By William J. Spooner, *Nottingham.*

977. Design for Lace Curtain.
By John Clews, *Nottingham.*

978. Design for Lace Curtain.
By George Woollatt, *Nottingham.*

979. Two Designs for Lace Curtains.
By Miss Marion Elwood, *Nottingham.*

980. Design for Lace Curtain.
By George F. Turton, *Nottingham.*

981. Design for Lace Curtain.
By A. J. Sewell, *Nottingham.*

982. Design for Lace Curtain.
By William J. Spooner, *Nottingham.*

983. Design for Lace Curtain.
By W. R. S. Hancock, *Nottingham.*

984. Design for a Lace Curtain.
By Francis B. Heald, *Nottingham.*

985. Design for a Lace Curtain.
By Frederick H. Dobbs, *Nottingham.*

986. Design for a Lace Curtain.
By William Bucknall, *Nottingham.*

987. Design for a Lace Set.
By Miss Agnes Dickeson, *Dover.*

988. Design for a Swiss Store.
By James Butler, *Nottingham.*

989. Design for Lace Curtain.
By Miss Blanche Story, *Nottingham.*

990. Design for a Swiss Hand-made Lace Curtain.
By Thomas W. Hammond, *Nottingham.*

991. Designs for Lace Flouncings.
By Miss Emily S. Heise, *Birkenhead.*

992. Design for Lace Curtain.
By Thomas Kirk, *Nottingham.*

993. Design for Lace Curtain.
By Robert H. Bishop, *Nottingham.*

994. Design for Lace Curtain.
By John M. Carr, *Nottingham.*

995. Design for Lace Curtain.
By Thomas Dutton, *Nottingham.*

996. Design for a Lace Set.
By Miss M. Joyce, *Dover.*

997. Design for a Lace Curtain.
By George Stafford, *Nottingham.*

998. Design for a Lace Curtain.
By Miss Helen Goodyer, *Nottingham.*

999. Design for a Lace Curtain.
By John M. Carr, *Nottingham.*

1000. Design for Lace Collar, Cuffs, and Handkerchief.
By George H. Holmes, *Nottingham.*

1001. Design for a Lace Handkerchief.
By Miss Marion Browning, *Salisbury.*

1002. Design for a Lace Cape.
By Miss Jessie Hallam, *Exeter.*

1003. Design for a Lace Set.
By William Harding, *Nottingham.*

1004. Design for a Lace Set.
By Louis Bircumshaw, *Nottingham.*

1005. Design for Lace Flouncing.
By Miss Marcella Irwin, *Dublin.*

1006. Design for Lace Flouncing.
By Miss Jessie Hallam, *Exeter.*

1007. Design for a Lace Rotonde.
By Edwin Doughty, *Nottingham.*

1008. Design for Lace Window Valance.
By William J. Spooner, *Nottingham.*

1009. Design for Lace Flouncing.
By Miss Frances L. Jordan, *Dublin.*

1010. Design for Lace Flouncing.
By Miss Elizabeth Irwin, *Dublin.*

1011. Design for Lace Flouncing.
By Miss Anne Twigge, *Exeter.*

1012. Two Designs for Lace Curtains.
By J. W. Wood, *Nottingham.*

1013. Design for a Lace Collar.
By Miss Maud Kingdon, *Exeter.*

1014. Design for Lace Flouncing.
By Miss Jessie Hallam, *Exeter.*

1015. Design for Lace Shawl.
By Henry Horsefield, *Nottingham.*

1016. Design for Lace Neckerchief.
By Miss Marion Browning, *Salisbury.*

1017. Design for Lace Fan.
By Miss Caroline Maltby, *Bloomsbury.*

1018. Design for Lace Curtain.
By J. G. Mackenzie, *Belfast.*

1019. Design for Lace Flouncing.
By Miss Louise Wheaton, *Exeter.*

1020. Design for a Lace Flounce.
By Miss Charlotte G. Trower, *East Herts,*

1021. Design for Lace Flouncing.
By Miss Marcella Irwin, *Dublin.*

1022. Design for Lace Handkerchief.
By Miss Agnes Dickeson, *Dover.*

1023. Design for Lace Parasol Cover.
By Miss Adeline King, *Salisbury.*

1024. Design for Lace Flouncing.
By Miss Adeline King, *Salisbury.*

1025. Design for Lace Fan.
By Miss Marion Browning, *Salisbury.*

1026. Design for Lace Collarette.
By Miss Maud Kingdon, *Exeter.*

1027. Design for Lace Flouncing.
By Miss Marian Moore, *Dublin.*

1028. Design for Lace Curtain.
By Miss Alice Bailey, *Dublin Metropolitan.*

1029. Design for Lace Flounce and Edging.
By Miss Marianne Mansell, *Lambeth.*

1030. Design for Lace Handkerchief Border.
By Miss Charlotte G. Trower, *East Herts.*

1031. Design for Lace Curtain.
By William McGowan, *Belfast.*

1032. Design for Lace Flounce.
By Miss Susan Ball, *Dublin.*

1033. Design for Damask Table Cloth.
By John G. Mackenzie, *Belfast.*

1034. Six Specimens of Lace Edging.
By F. J. Staynes, *Nottingham.*
Manufactured by Thos. B. Cutts, *Nottingham.*

1035. Design for Lace Flouncing.
By Miss Anne Twigge, *Exeter.*

1036. Design for Lace Curtain.
By William Hardy, *Nottingham.*

1037. Design for Lace Cape.
By George Sheldon, *Nottingham.*

1038. Five Specimens of Lace Edging.
By Arthur Foster, *Nottingham.*
Manufactured by Thornley & Clark, *Nottingham.*

1039. Four Specimens of Lace Edging.
By Arthur Foster, *Nottingham.*
Manufactured by Thornley & Clark, *Nottingham.*

1040. Eight Specimens of Lace Edging.
By Arthur Foster, *Nottingham.*
Manufactured by Thornley & Clark, *Nottingham.*

1041. Nine Specimens of Lace Edging.
By John Cutts, *Nottingham.*
Manufactured by Thos. B. Cutts, *Nottingham.*

1042. Four Specimens of Lace Edging.
By Charles J. Atkey, *Nottingham.*
Manufactured by Thomas B. Cutts. *Nottingham.*

1043. Seven Specimens of Lace Edging.
By Arthur Foster, *Nottingham.*
Manufactured by Thornley & Clark, *Nottingham.*

SECTION XI.

Woven Damasks in Linen and Cotton, plain or in colours.

1044. Six White Damask Table-cloths.
Designed by John Guthrie Mackenzie, *Belfast.*
Manufactured by Hamilton, Hill, & Co., *Belfast.*

1045. Two Damask Table-cloths, one bleached, one unbleached.
Designed by J. Spence Ingall, *Barnsley.*
Manufactured by Messrs. Richardson & Co., *Barnsley.*

1046. White Damask Table-cloth.
Designed by William Jones, *Manchester.*
Manufactured by Oliver & Atcherley, *Manchester.*

1047. Twelve Damask Table-napkins.
Designed by William Jones, *Manchester.*
Manufactured by Oliver & Atcherley, *Manchester.*

1048. Damask Table-cloth.
Designed by Miss Susan Ball, *Dublin.*
Manufactured by The Bessborough Co., *Newry.*

1049. Damask Table-cloth.
Designed by James Ward, *Belfast and South Kensington.*
Manufactured by Messrs. Magee & Co., *Belfast.*

SECTION XII.

Silks, Ribbons, Trimmings, etc., including Furniture and Dress Fabrics. Embroidery in Silk.

1050. Silk Hanging, designed for the decoration of H.M. State Throne and Ball-room at Buckingham Palace.
By William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1051. Damasked Silk Hanging; blue floral design on "old gold" satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1052. Tissue Silk Hanging, floral design in Louis XIII. style, in red on black satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1053. Tissue Silk Hanging, floral design in coral and gold, on bronze green satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1054. Damasked Silk Hanging, arbutus design in shot black on old gold, satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1055. Damasked Silk Hanging; trophies of musical instruments, in the early French style, in brown on buff satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1056. Silk Hanging with decoration of conventional cornflowers and leaves, in colours on black satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1057. Damasked Silkhanging, conventional Greek design in brown on buff satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1058. Silk Hanging; decoration of Oleander with peacocks and butterflies, illuminated in proper colours, on black satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1059. Damasked Silk Hanging; decoration of conventional oleanders.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1060. Brocatelle Hanging; conventional floral design in colours on buff ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1061. Damasked Silk Hanging; floral design interspersed with birds in "shot black" on yellow ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1062. Brocaded Silk Hanging; design in early French style of birds and fruits, in colours on dead ivory ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1063. Silk Hanging, richly brocaded; design of seaweeds and shells, in natural colours on green satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1064. Silk Hanging, richly brocaded; design of seaweeds and shells, in natural colours, on ivory satin ground.
Designed by William Folliott, *Spitalfields.*
Manufactured by W. Walters & Sons, *Newgate Street, E.C.*

1065. Piece of Brocaded Satin Damask.
Designed by G. C. Haité, *Croydon.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., 23, *Portland-street, Manchester.*

1066. Piece of Brocaded Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1067. Piece of Brocaded Silk Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1068. Piece of Brocaded Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1069. Piece of Brocaded Satin Damask.
Designed by G. C. Haité, *Croydon.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1070. Table Cover, Silk Damask.
Designed by T. W. Hay, *Edinburgh.*
Manufactured by Cowlishaw, Nicol, and Co., *Manchester.*

1071. Piece of Brocaded Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1072. Piece of Brocaded Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1073. Piece of Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1074. Piece of Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1075. Piece of Brocaded Satin Damask.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1076. A Collection of Specimens of Silk Manufacture.
Designed by James Adams, *Coventry and Manchester;* James Hoggins, *Coventry and Macclesfield;* Frank E. Adams, *Macclesfield;* J. O. Nicholson, *Macclesfield.*
Manufactured by J. O. Nicholson, *Macclesfield.*

1077. Silk Hanging. Chinese design.
Designed by John Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1078. Satin Damask Handkerchief.
Designed by John Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1079. Silk and Metal Brocade.
Designed by John Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1080. Broché Satin Muffler or Wrap.
Designed by John Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1081. Silk Hanging, design reproduced from old stuff.
Designed by John Sheldon, *Macclesfield,*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1082. Figured Silk Muffler or Wrap.
Designed by J. H. Wild, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1083. Silk Muffler or Wrap.
Designed by J. H. Wild, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1084. Figured Satin Dress Piece.
Designed by J. H. Wild, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1085. Figured Silk, reproduction of a "Moyen-Age" design.
Designed by J. H. Wild, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1086. Silk Muffler or Wrap.
Designed by J. H. Wild, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1087. Figured Satin Dress Fabric.
Designed by Arthur Cartwright, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1088. Brocaded Handkerchief.
Designed by Arthur Cartwright, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1089. Brocaded Handkerchief.
Designed by Arthur Cartwright, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1090. Satin Damask Dress Piece.
Designed by F. W. Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1091. Silk and Metal Brocade for garments.
Designed by F. W. Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1092. Silk Damask Handkerchief.
Designed by F. W. Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1093. Figured Silk Muffler or Wrap.
Designed by F. W. Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1094. Satin Damask Handkerchief.
Designed by F. W. Sheldon, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1095. Two Brocaded Silk Handkerchiefs.
Designed by Thomas Kerr, *Macclesfield.*
Manufactured by John Birchenough & Sons, *Macclesfield.*

1096. A Series of Five Designs in Silk for Furniture Coverings.
Designed by George Edward Drake, *Halifax.*
Manufactured by Messrs. W. Walters & Sons, *Newgate Street, E.C.*

1097. Four Specimens of Furniture Silk Damasks.
Designed by Miss Susan P. Ball, *Dublin.*
Manufactured by Messrs. Pym Bros., *South Gt. George's Street, Dublin.*

1098. Specimen of Silk Furniture Damask.
Designed by Miss Mary Cameron, *Dublin.*

1099. Specimen of Silk Furniture Damask.
Designed by Miss Isabella C. Bergin, *Dublin.*

1100. Specimen of Furniture Tapestry.
Designed by Joseph Kavanagh, *Dublin.*
Manufactured by Messrs. Fry & Co., *Westmoreland Street, Dublin.*

1101. Design for Furniture Damask, and Specimen of same.
Designed by Miss Anna F. Ruxton, *Dublin.*
Manufactured by Messrs. Fry & Co., *Westmoreland Street, Dublin.*

1102. Three Specimens of Silk Furniture Damasks.
Manufactured by Messrs. Fry & Co., *Westmoreland Street, Dublin.*

1103. Specimen of Silk Furniture Damask.
Designed by T. Thomas, *Dublin.*

1104. Design for Silk Damask.
By W. J. Clulow, *Macclesfield.*

1105. Design for Silk Handkerchief.
By W. J. Clulow, *Macclesfield.*

1106. Two Designs for Printed Silk Hangings.
By Frank E. Adams, *Macclesfield.*

1107. Design for Furniture Silk.
By H. Riseley, *Macclesfield.*

1108. Design for Furniture Silk.
By J. T. Robinson, *Macclesfield.*

1109. Design for Silk Handkerchief.
By Thomas E. Doran, *Macclesfield.*

1110. Design for Printed Silk Handkerchief.
By J. E. Dawson, *Macclesfield.*

1111. Two Designs for Silk Handkerchiefs.
By Hugh Grimshaw, *Macclesfield.*

1112. Design for Embroidered Silk Cover.
By T. J. Donohue, *Macclesfield.*

1113. Design for Embroidered Silk Cover
By John Booth, *Macclesfield.*

1114. Design for Silk Hanging.
By Miss Charlotte F. Shelton, *Cheltenham.*

1115. Design for Damask Table-Cover.
By John Quiller Lane, *Belfast and South Kensington.*

1116. Design for Damask Table-Cover.
By Miss Frances Brett, *Dublin.*

1117. Design for Damask Table-Cover.
By Miss Mary A. Mayee, *Dublin.*

1118. Two Bed Quilts, embroidered in coloured silks.
Designed by James Hoggins, *Coventry and Macclesfield.*
The colouring by J. O. Nicholson.
Executed in the Macclesfield Embroidery School.

1119. Sofa Back, embroidered in coloured silks.
Designed by Frank E. Adams, *Coventry.*
Executed at the Macclesfield Embroidery School.

1120. Screen, embroidered with "Lahore Scroll" pattern in coloured silks.
Designed by James Hoggins, *Coventry and Macclesfield.*
The colouring by J. O. Nicholson.
Executed at the Macclesfield Embroidery School.

1121. Silk Handkerchief.
Designed by James Hoggins, *Coventry and Macclesfield.*
Manufactured by J. O. Nicholson, *Macclesfield.*

1122. Design for Furniture, silk brocade.
From the School of Art, Dublin.

1123. Design for silk damask.
By Elizabetb E. Irwin, *Dublin.*

SECTION XIII.

Mixed Woven Fabrics for Dresses, Shawls, Scarfs, etc.

1124. Damasks, mixed fabrics, awarded the Gold Medal of the Yorkshire Union of Mechanics' Institutes.
Designed by Jonathan Foster, *Halifax School and Bradford Technical College.*

1125. Damasks, mixed fabrics.
Designed by Joseph Midgley, *Halifax School and Bradford Technical College.*

1126. Fancy Fabrics and Damasks, mixed fabrics, awarded the Cloth-workers' Gold Medal at the Bradford Industrial Exhibition, 1882.
Designed by James T. Lushman, *Halifax School and Bradford Technical College.*

SECTION XIV.

Printed Fabrics.

1127. Four designs for Muslins.
By Frances L. Jordan, *Dublin.*

1128. Four designs for Muslins.
By Miss Eleanor Kerr, *Dublin.*

1129. Four designs for Muslins.
By Miss Marcella Irwin, *Dublin.*

1130. Five designs for Muslins.
By Mary Baumgartner, *Great Yarmouth.*

1131. Five designs for Muslins.
By Rosetta C. Burgess, *Great Yarmouth.*

1132. Four designs for Muslins.
By Gertrude L. Brown, *Great Yarmouth.*

1133. Specimens of Printed Cotton Fabrics.
Designed by Joseph Waterhouse, *Manchester.*
Manufactured by Thomas Hoyle & Sons, *Manchester.*

1134. Two specimens of Cretonnes.
Designed by Charles A. Brindley, *Kidderminster and South Kensington.*

1135. Two specimens of Cretonnes.
Designed by Charles A. Brindley, *Kidderminster and South Kensington.*

1136. Specimens of Cretonnes and Printed Fabrics for Dresses.
Designed by W. J. Muckley, *Stourbridge, Birmingham, Somerset House, and Marlborough House, assisted by* W. R. & A. F. Muckley, *Manchester.*
Manufactured by E. C. Potter & Co., *Manchester.*

1137. Designs for Cretonnes.
By Henry Gibson, *South Kensington.*

1138. Designs for Cretonnes.
By James Rowley, *West London.*

1139. Designs for Chintz.
By Miss Louisa Aumonier, *St. Martin's.*

SECTION XV.

Carpets and Tapestry. Curtains, Table Covers, &c.

1140. Pattern of Carpet, "Gobelins Axminster."
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Tomkinson & Adam, *Church Street, Kidderminster.*

1141. Pattern of Carpet, "Victorian Axminster."
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Tomkinson & Adam, *Church Street, Kidderminster.*

1142. Pattern of Carpet, "Victorian Axminster."
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Tomkinson & Adam, *Church Street, Kidderminster.*

1143. Pattern of Carpet, "Victorian Axminster."
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Tomkinson & Adam, *Church Street, Kidderminster.*

1144. Pattern of Brussels Carpet, with border.
Designed by David Campbell, *Glasgow and Halifax.*
Manufactured by J. W. & C. Ward, *Halifax.*

1145. Pattern of Brussels Carpet.
Designed by Herbert Robinson, *Halifax.*
Manufactured by Messrs. J. Crossley & Co., *Halifax.*

1146. "Mecca" Rug.
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Messrs. Tomkinson & Adam, *Church Street, Kidderminster.*

1147. "Mecca" Rug.
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Messrs. Tomkinson & Adam, *Church Street, Kidderminster.*

1148. "Mecca" Rug.
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Messrs. Tomkinson & Adam, *Church Street Kidderminster.*

1149. "Mecca" Rug.
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Messrs. Tomkinson & Adam, *Church Street, Kidderminster,*

1150. "Mecca" Rug.
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Messrs. Tomkinson & Adam, *Church Street, Kidderminster.*

1151. "Mecca" Rug.
Designed by Peter Adam, *Kidderminster and South Kensington.*
Manufactured by Messrs. Tomkinson & Adam, *Church Street, Kidderminster.*

1152. Pattern of Brussels Carpet.
Designed by P. Morrison, *Kidderminster.*
Manufactured by Messrs. R. Smith & Sons, *Kidderminster.*

1153. Pattern of Wilton Carpet.
Designed by Daniel Duck & J. H. Park, *Coventry and Kidderminster.*
Manufactured by Whittall & Co., *Kidderminster.*

1154. Pattern of Brussels Carpet.
Designed by J. B. Smith, *Halifax.*
Manufactured by Messrs. J. W & C. Ward, *Ellen Royd Mills, Halifax.*

1155. Pattern of Brussels Carpet, with border.
Designed by David Campbell, *Glasgow and Halifax.*
Manufactured by J. W. & C. Ward, *Halifax.*

1156. Pattern of Brussels Carpet.
Designed by Herbert Robinson, *Halifax.*
Manufactured by Messrs. John Crossley & Co., *Halifax.*

1157. Pattern of Brussels Carpet.
Designed by J. B. Smith, *Halifax.*
Manufactured by J. W. & C. Ward, *Halifax.*

1158. Small Tapestry Carpet.

1159. Pattern of Wilton Pile Carpet.
Designed by William Winbury, *Kidderminster.*
Manufactured by Messrs. Morton & Sons, *Kidderminster.*

1160. Pattern of Brussels Carpet.
Designed by P. Morrison, *Kidderminster.*
Manufactured by Messrs. Smith & Sons, *Kidderminster.*

1161. Pattern of Brussels Carpet.
Designed by Herbert Robinson, *Halifax.*
Manufactured by John Crossley & Co., *Halifax.*

1162. Pattern of Brussels Carpet, with border.
Designed by William Winbury, *Kidderminster.*
Manufactured by Morton & Sons, *Kidderminster.*

1163. Pattern of Carpet, Indian design.
Designed by Daniel Duck, *and* John H. Park, *Kidderminster and Coventry.*
Manufactured by Charles Harrison, *Stourport.*

1164. Pattern of Brussels Carpet.
Designed by Herbert Robinson, *Halifax.*
Manufactured by Messrs. John Crossley & Co., *Halifax.*

1165. Pattern of Brussels Carpet, with border.
Designed by F. Crossley, *Halifax.*
Manufactured by J. W. & C. Ward, *Halifax.*

1166. "Royal Wilton" Carpet.
Designed by Micah Chambers, *Durham.*
Manufactured by Messrs. Henderson & Co., *Durham*, price £10 17*s.* 6*d.*
(Lent by Messrs. Treloar & Sons, London.)

1167. Henderson's "Patent Durham Axminster."
Designed by Micah Chambers, *Durham.*
Manufactured by Messrs. Henderson & Co., *Durham*, price £10 14*s.* 6*d.*
(Lent by Messrs. Treloar & Sons, London.)

1168. Pattern of Royal Axminster Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1169. Pattern of Best Wilton Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1170. Pattern of Best Wilton Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1171. Pattern of Best Brussels Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1172. Pattern of Best Wilton Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1173. Pattern of Royal Axminster Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1174. Pattern of Royal Axminster Carpet.
Designed by George Kingman, *Bath, Kidderminster, and South Kensington.*
Manufactured by Messrs. H. J. Dixon & Sons, *Kidderminster.*

1175. Pattern of Wilton Carpet, with border.
Designed by James Rowley, *West London.*
Manufactured by R. Hellbronner, 300 *Oxford Street, W.*

1176. Pattern of Brussels Carpet.
Designed by Herbert Robinson, *Halifax.*
Manufactured by Messrs. John Crossley and Co., *Halifax.*

1177. Pattern of Brussels Carpet, with border.
Designed by F. Crossley, *Halifax.*
Manufactured by J. W. and C. Ward, *Halifax.*

1178. Pattern of Tapestry Hanging.
Designed and manufactured by John Thomas, *Halifax.*

1179. Carriage Tapestry.
Designed by W. Jones, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1180. Two Patterns of Tapestry.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1181. Pattern of Tapestry Hanging.
Designed by W. H. Webster, *Halifax.*
Manufactured by Messrs. J. W. and C. Ward, *Halifax.*

1182. Pattern of Tapestry Hanging.
Designed by John Thomas, *Halifax.*
Manufactured by Messrs. J. W. and C. Ward, *Halifax.*

1183. Tapestry Hanging.
Designed by J. W. Riley, *Halifax.*
Manufactured by H. C. McCrea and Co., *Harrison Road, Halifax.*

1184. Tapestry Hanging.
Designed by J. W. Riley, *Halifax.*
Manufactured by H. C. McCrea and Co., *Harrison Road, Halifax.*

1185. Tapestry Hanging.
Designed by J. W. Riley, *Halifax.*
Manufactured by H. C. McCrea and Co., *Harrison Road, Halifax.*

1186. Pattern of Tapestry Hanging.
Designed and manufactured by John Thomas, *Halifax.*

1187. Specimen of Tapestry Hanging.
Designed by W. Jones, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1188. One Specimen of Tapestry.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1189. Specimen of Tapestry.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1190. Specimen of Tapestry.
Designed by J. Alexander, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1191. Specimen of Tapestry.
Designed by J. J. Black, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, and Co., *Manchester.*

1192. Tapestry Table Cover.
Designed by J. Thomas, *Halifax.*
Manufactured by Messrs. J. W. & C. Ward, *Halifax.*

1193. Pattern of Carpet.
Designed by J. Alexander, *Manchester.*
Manufactured by Messrs. Cowlishaw, Nicol, & Co., *Manchester.*

1194. Patent Oriental Reversible Curtain of Noil Silk, with section of another curtain showing the colours of plain filling.
Designed by E. F. Adams, *Kidderminster.*
Manufactured by Messrs. Barbour, Anderson, & Lawson, *Park View Works, Evanhaugh, Glasgow.*

1195. Red Plush Curtain, with tapestry border.
Designed by John Thomas, *Halifax.*
Manufactured by H. Eastwood & Co., *Moll Spring Works, Netherton, near Huddersfield.*

1196. Green Plush Curtain, with tapestry border.
Designed by John Thomas, *Halifax.*
Manufactured by H. Eastwood & Co., *Moll Spring Works, Netherton, near Huddersfield.*

1197. Muslin-Crete Curtain.
Designed by William Tannahill, *Kilmarnock.*
Manufactured by Messrs. Barbour & Anderson, *Glasgow.*

1198. Muslin-Crete Curtain.
Designed by William Tannahill, *Kilmarnock.*
Manufactured by Messrs. Barbour & Anderson, *Glasgow.*

1199. Silk and Wool Tapestry Hanging, buttercup pattern.
Designed by James Rowley, *West London.*
Manufactured by R. Hellbronner, 300 *Oxford Street, W.C.*

1200. Silk Tapestry Curtain.
Designed by William Jones, *Manchester School.*
Manufactured by Messrs. Cowlishaw, Nicol & Co., *Manchester.*

1201. Tapestry Curtain.
Designed by William Jones, *Manchester School.*
Manufactured by Messrs. Cowlishaw, Nicol & Co., *Manchester.*

1202. Pair of Patent Oriental Reversible Curtains, made of "Noil silk."
Designed by W. A. Lawson, *Glasgow.*
Manufactured by Messrs. Barbour, Anderson, & Co., *Glasgow.*

1203. Pair of Patent Oriental Reversible Curtains, made of spun silk.
Designed by John Brown, *Glasgow.*
Manufactured by Messrs. Barbour, Anderson, & Co., *Glasgow.*

1204. Curtain, mixed fabric.
Designed by J. W. Riley. *Halifax.*
Manufactured by Messrs. H. C. McCrea & Co., *Halifax.*

1205. Two Specimens of Tapestry.

1206. Design in Tapestry Curtain.
Designed and Manufactured by W. Scott Morton & Co., *Edinburgh.*

1207. Two Designs for Tapestry Curtains.
By Miss Mary Denley, *Lambeth and Westminster.*

1208. Design for a Carpet.
By Marcella Irwin, *Dublin.*

1209. Design for Axminster Carpet.
By Frank Porter, *Stourbridge.*

1210. Three Designs for Brussels Carpet.
By H. A. J. Budd, *Lambeth.*

1211. Design for Brussels Carpet.
By E. J. Milward, *Kendal.*

1212. A Series of Drawings, illustrative of a Technical Course, for Carpet Designers, as developed in the Kidderminster School of Art, by Wm. Tucker, Head Master, consisting of:—
Outline from copy.
By John Cantrell, *Kidderminster*
Painting from copy in one colour.
By George Harriss, *Kidderminster.*
Outline from nature.
By John Cantrell, *Kidderminster.*
Analysis of plant form in outline.
By Frederick Mountford, *Kidderminster.*
Analysis of plant form in colour.
By George Barker, *Kidderminster.*
Painting in tempera from nature.
By C. J. Carter, *Kidderminster.*
Designs to fill spaces in one colour.
By George Randall, *Kidderminster.*
Designs to fill spaces in colours.
W. H. Thatcher, *Kidderminster.*

1213. Design for a Brussels Carpet.
By J. H. Hussey, *Kidderminster.*

1214. Design for an Axminster Rug.
By J. Holgate, *Halifax.*

1215. Design for a Floorcloth.
By William Foster, *Salisbury.*

1216. Design for a Carpet.
By A. Nowell, *Salisbury.*

1217. Designs for Brussels Carpet.
By G. Kingman, *Kidderminster.*

1218. Design for Carpet.
By Miss Mary Denley, *Lambeth and Westminster.*

1219. Design for Carpet.
By W. Chrippes, *West London.*

1220. Design for Carpet.
By G. Barker, *Kidderminster.*

1221. Design for a Carpet.
By Gideon M. Fidler, *Salisbury.*

1222. Designs for Royal Axminster Carpet.
By G. Kingman, *Kidderminster.*

1223. Design for Patent Axminster Carpet.
By Alexander Park, *Glasgow.*

1224. Design for Carpet.
By Miss Mary Denley, *Lambeth and Westminster.*

1225. Design for Carpet.
By William H. Murray, *Dublin.*

1226. Design for Axminster Carpet.
By G. Kingman, *Kidderminster.*

1227. Design for Carpet.
By M. Harding, *Salisbury.*

1228. Design for Brussels Carpet.
By C. A. Brindley, *Kidderminster and South Kensington.*

1229. Design for Carpet.
By J. H. Park, *Coventry.*

1230. Design for Royal Axminster Carpet.
By G. Kingman, *Kidderminster.*

1231. Photographs of Designs for Carpets.
By George Lees, *Kidderminster.*

1232. Design for Brussels Carpet.
By F. Porter, *Stourbridge.*

1233. Designs for Brussels Carpet.
By George Kingman, *Kidderminster.*

1234. Designs for Brussels Carpet.
By George Kingman, *Kidderminster.*

1235. Design for Carpet.
By Miss Mary Denley, *Lambeth and Westminster.*

1236. Design for Brussels Carpet.
By F. Porter, *Stourbridge.*

1237. Design for Brussels Carpet.
By F. Porter, *Stourbridge.*

1238. Design for Patent Axminster Carpet.
By Alexander Park, *Glasgow.*

1239. Design for Wilton Carpet.
By J. J. Brownsword, *Derby Central School.*

1240. Design for Carpet.
By P. Yates, *Salisbury.*

1241. Design for Axminster Rug.
By John Thomas, *Halifax.*

1242. Design for Wilton Carpet.
By Miss Amy Straton.

1243. Design for Rug.
By J. H. Park, *Coventry.*

1244. Design for Patent Axminster Carpet.
By J. Brown, *Glasgow.*

1245. Design for Carpet.
By James Fletcher, *Glasgow.*

1246. Designs for Floor Decorations.
By F. Mountford, *Kidderminster.*

SECTION XVI.

Painted Decorations, Wall Papers, &c.

1247. Frieze.
Designed and Manufactured by Scott, Morton & Co., *Edinburgh.*

1248. Decorative Panel, portion of.
Painted in the Keims Process by J. W. E. Page, *Lambeth and South Kensington.*

1249. Decorative Panel.
Executed by W. M. Palin, *South Kensington.*

1250. Design for Decorative Panel.
By H. Bone, *Lambeth.*

1251. Design for portion of Frieze.
By E. Hammond, *West London.*

1252. Frieze.
Designed and executed by J. Rhind and W. Turner, *Edinburgh.*

1253. Portion of Decorative Screen.
Executed by Louis Davis, *South Kensington.*

1254. Four frames of Decorative Designs.
By Leonard Wyburd, *West London.*

1255. Design for Frieze for Music Room.
By J. W. E. Page, *South Kensington.*

1256. Design for Frieze.
By E. Hammond, *Lambeth and West London.*

1257. Design for Wall Decoration, painting on canvas.
By Miss Julianna Lloyd, *West London.*

1258. Wall Paper, Dado Decoration.
Designed by G. C. Haité, *Croydon.*
Manufactured by William Woollams & Co., *London.*

1259. ' of four Friezes, wall paper.
esigned by Reuben Bennett *Man-*
Manufactured by William Woollams & Co., *London.*

1260. Design for Wall Paper.
By O. W. Davis, *West London.*
Manufactured by William Woollams & Co., *London.*

1261. Wall Paper, Dado Decoration.
Designed by Owen W. Davis, *West London.*
Manufactured by Wm. Woollams & Co., *London.*

1262. Wall Paper, Dado Decoration (Italian style).
Designed by H. Noble, *West London.*
Manufactured by Messrs. Woollams & Co., *London.*

1263. Wall Decoration.
Designed by J. Holgate, *Westminster.*
Manufactured by F. Walton & Co., *London.*

1264. Design for Interior Decoration.
By E. Page Turner, *Sheffield.*

1265. Decorative Panel in Oils.
By G. C. Haité, *Croydon.*

1266. Wall Paper, Dado Decoration.
Designed by A. Silver, *Reading.*
Manufactured by Messrs. Woollams & Co., *London.*

1267. Wall Paper, Dado Decoration.
Designed by Miss Louisa Aumonier, *St. Martin's.*
Manufactured by Messrs. Woollams, *London.*

1268. Wall Paper, Dado Decoration.
Designed by R. O. Rickatson, *West London.*
Manufactured by William Woollams & Co., *London.*

1269. Wall Paper and Frieze.
Designed by W. Mückley, *Marlborough House and Manchester.*
Manufactured by Messrs. Jeffrey & Co., *London.*

1270. Two Friezes.
Designed by T W. Hay, *Edinburgh.*
Manufactured by Messrs. Woollams & Co., *London.*

1271. Two Designs for Friezes.
By T. W. Hay, *Edinburgh.*
Manufactured by Messrs. Woollams & Co., *London.*

1272. Design for Frieze.
By A. J. Tatham, *West London.*
Manufactured by Messrs. Woollams & Co., *London.*

1273. Wall Paper.
By G. C. Haité, *Croydon.*
Manufactured by Messrs. Woollams & Co., *London.*

1274. Wall Paper, Dado Decoration.
Designed by O. W. Davis, *West London.*
Manufactured by Messrs. Woollams & Co., *London.*

1275. Wall Paper, Dado Decoration.
By A. Silver, *Reading.*
Manufactured by Messrs. Woollams & Co., *London.*

1276. Wall Paper, Dado Decoration.
Designed by G. C. Haité, *Croydon.*
Manufactured by Messrs. Woollams.

1277. Wall Paper, Dado Decoration.
Designed by Henry Noble, *West London.*
Manufactured by Messrs. Woollams.

1278. Wall Paper, Dado Decoration.
Designed by G. C. Haité, *Croydon.*
Manufactured by Messrs. Woollams.

1279. Specimens of Wall and Dado Decoration in Lincrusta Walton.
Designed by C. J Beaupré, *West London.*
Manufactured by Messrs. Walton & Co., *London.*

1280. Frieze and Wall Decoration, Tynecastle Tapestry.
Designed and executed by Scott, Morton, & Co., *Edinburgh.*

1281. Design for Painted Frieze.
By E. Page Turner, *Sheffield.*

1282. Designs and working Drawings to scale for the decorations of the ceilings of the billiard-room at Wortley Hall, near Sheffield, the seat of the Earl of Wharncliffe.

The billiard-room comprises a central portion lighted by a lantern containing five windows on

each side and three at each end, which is surmounted by a cove and ceiling and two wings, each lighted by a skylight above a cove. The designs in the ceiling above the lantern and in the friezes in the central portion and wings are in relief, those in the coves and on the architraves and mouldings are flat, the coves being treated to imitate relief. The designs throughout, whether flat or in relief, are silver and gold, and the ground either blue, green, or purple. The treatment combines a fretwork of a Chinese character, with classical festoons and scrolls; birds, flowers, baskets of fruit, &c., being introduced.

The Chinese fret is carried through every feature of the decoration, and form the basis of the ornamental treatment.

Designed by Edward John Poynter, R.A., *Somerset House.*

1283. Two Chalk Drawings for Fresco Decoration of the Martyrdom of St. Stephen.
By E. J. Poynter, R.A., *Somerset House.*

1284. A Series of Twelve Designs illustrating the Months, for the interior decoration of the Grill Room, South Kensington Museum.
By E. J. Poynter, R.A., *Somerset House.*

1285. Design for the Decoration of the soffit of the Lecture Theatre, South Kensington Museum.
By E. J. Poynter, R.A., *Somerset House.*

1286. Four Frames of Designs for ceilings, Dado, lunette, and wall decorations.
Designed by A. Morgan, *S. Kensington.*

1287. Design for Wall Decoration.
By John Lamb, *West London.*

1288. Design for Wall Decoration.
By James Ward, *Belfast.*

1289. Design for Panel Decoration.
By C. Campbell and F. G. Smith, *Lambeth and West London.*

1290. Decorative Panel.
Designed and executed by W. Jones, *Manchester.*

1291. Design for decoration of the chapel, Haileybury College.
Also design for wall decoration, St. Thomas Church, Clapton.
By C. Campbell and F. G. Smith, *Lambeth and West London.*

1292. Panel and Door Decoration.
Designed by Alfred Morgan, *Norwich and South Kensington.*

1293. Design for Decorative Panel.
By E. Page Turner, *Sheffield.*

1294. Design for Side of a Room. Painted Majolica Tiles.
By T. Smith, *Coalbrookdale.*

1295. Design for Wall and Lunette Decoration; also Decoration of Chimney Corner of billiard room.
By E. Page Turner, *Sheffield.*

1296. Design for Staircase and Wall Decoration.
By Charles Campbell, *Lambeth and West London.*
Executed by Campbell, Smith & Campbell.

1297. Design for Wall Decoration.
By James Ward, *Belfast.*

1298. Two frames of Designs for Wall Papers.
By George E. Drake, *Halifax.*
Manufactured by Scott, Cuthbertson & Co., *Chelsea.*

1299. Wall Paper.
Designed by Miss Louisa Aumonier, *St. Martin's.*
Manufactured by Woollams & Co.

1300. Design for Wall Paper.
By Louis Bircumshaw, *Nottingham.*

1301. Two Wall Papers.
Designed by G. E. Drake, *Halifax.*
Manufactured by Scott, Cuthbertson & Co., *Chelsea.*

1302. Design for Wall Paper.
By J. Dunlop, *Kilmarnock.*

1303. Wall Paper and Border.
Designed by G. E. Drake, *Halifax.*
Manufactured by Scott, Cuthbertson & Co., *Chelsea.*

1304. Wall Paper,
Designed by G. E. Drake, *Halifax.*
Manufactured by Scott, Cuthbertson & Co., *Chelsea.*

1305. Wall Paper,
Designed by R. O. Rickatson, *West London.*
Manufactured by Messrs. Woollams.

1306. Wall Paper,
Designed by G. C. Haité, *Croydon.*
Manufactured by Messrs. Woollams.

1307. Design for Wall Paper,
By F. E. Adams, *Macclesfield.*

1308. Design for Wall Paper,
By C. J. Beaupré, *West London.*

1309. Design for Wall Paper,
By G. P. Churcher, *South Kensington.*

1310. Design for Wall Paper.
By A. J. Budd, *Lambeth.*

1311. Twenty-four Frames containing specimens of Wall Paper,
Designed by H. W. Ellis, *Cambridge;* T. W. Hay, *Edinburgh;* A. Silver; *Reading;* G. C. Haité, *Croydon;* Jane Tarver, *Northampton;* A. Mannoch, *West London;* O. W. Davis, *West London;* Louisa Aumonier, *St. Martin's;* Allan Ramsey, *West London;* R. O. Rickatson, *West London;* A. J. Tatham, *West London;* B. A. Lillie, *West London;* H. Noble, *West London.*
Manufactured by Messrs. Woollams & Co., *London.*

1312. Two Wall Papers,
Designed by Allan Ramsey, *West London.*

1313. Two Designs for Wall Papers,
By John J. Allen, *Nottingham.*

1314. Design for Wall Paper.
By S. L. Chadbourne, *Nottingham.*

1315. Design for Wall Paper.
By Miss Frances Brett, *Dublin.*

1316. Design for Wall Paper.
By H. J. Tomlins, *Worcester.*

1317. Wall Paper.
Designed by G. C. Haité.
Manufactured by Woollams, *Croydon.*

1318. Design for Wall Paper.
By H. King, *Nottingham.*

1319. Design for Wall Decoration.
By Miss Alice Bailey, *London.*

1320. Wall Paper.
Designed by T. W. Hay, *Edinburgh.*
Manufactured by Messrs. Woollams.

1321. Design for Wall Paper.
By Miss Beatrice Alcock, *Manchester.*

1322. Design for Frieze and design for Decorative Panel.
By E. Page Turner, *Sheffield.*

1323. Design for the decoration of the Billiard Room at Stoke Court, Bucks.
By Charles Campbell, *Lambeth and West London.*

1324. Design for the side of a Room, in painted tiles and majolica, with stained glass windows.
By Frederick Leighton, *Coalbrookdale.*

1325. Design for a Ceiling, suitable for a synagogue.
By John W. Bradburn, *Coalbrookdale.*

1326. Design for Panel.
By J. C. Callowhill, *Worcester.*

1327. Design for Frieze.
By A. McCormick, *Belfast.*

SECTION XVII.

Lithographs, Chromolithographs, &c.

1328. Sheet of Calendars, Invitation Cards, &c.
Designed by W. S. Black, *Edinburgh.*
Chromolithographed by Messrs. G. Waterston & Sons, *Edinburgh.*

1329. Sheets of Designs for the Backs of Ball Programmes, &c..
By Miss Lilian Young, *Bloomsbury.*

1330. Sheet of Designs for the Illustration of Children's Picture Books.
By W. S. Black, *Edinburgh.*
Chromolithographed by Messrs. G. Waterston & Sons, *Edinburgh.*

1331. Sheet of Designs for the Illustration of Children's Picture Books.
By W. S. Black, *Edinburgh.*
Chromolithographed by Messrs. G. Waterston & Sons, *Edinburgh.*

1332. Sheet of Designs for the Backs of Playing Cards and Catalogue Covers.
By J. N. Fletcher, *Nottingham.*

1333. Fan.
Designed by a Student of the Bloomsbury School.
Chromolithographed by the Students of the Female Chromolithographic Studio, 33 *Red Lion Square.*

1334. Sheet of Book Covers, &c.
Designed by Miss Elizabeth Gulland, *Edinburgh.*
Chromolithographed by Messrs. T. A. Constable & Co., *Edinburgh.*

1335. Sheet of New Year Cards.
Designed by H. Maurice Page, *Croydon.*
Chromolithographed by Messrs. Hildesheimer & Faulkener, *London.*

1336. Sheet of Christmas and New Year Cards.
Designed by Eleanor Manley, *Bloomsbury.*
Chromolithographed by Messrs. Hildesheimer & Faulkner, *London.*

1337. Christmas and other Cards.
Designed by Mrs. T. W. Grey, *St. Martin's.*

1338. Two Sheets of Christmas, Easter, and other Cards.
Designed by W. J. Muckley, *Stourbridge*, *Birmingham*, *Somerset House*, and *Marlborough House*; assisted by W. R. & A. F. Muckley, *Manchester.*
Chromolithographed by Messrs. Hildesheimer & Faulkener, *Jewin Street, London.*

1339. Sheet of Birthday and other Cards.
Designed by Miss Maud Ashley West, *Bloomsbury.*
Chromolithographed by Messrs. T. De la Rue & Co., *London.*

1340. Sheet of Birthday and other Cards.
Designed by Charlotte James, *Bloomsbury.*
Chromolithographed by Messrs. Raphael Tuck & Sons, *London.*

1341. Sheet of Christmas and other Cards.
Designed by Miss Mary Agnes Lewis, *Lambeth.*

1342. Two designs for Christmas Cards.
Designed by Frederick Leighton, *Coalbrookdale.*

1343. Sheet of Christmas and other Cards
Designed by Miss Alice L. West, *Bloomsbury.*
Chromolithographed by Messrs. T. De la Rue & Co., *London.*

1344. Chromolithograph of a Chinese Cloisonné Vase, from a drawing. By W. J. Muckley, *Manchester.*
Executed by George Moore, *Manchester.*
Printed by Messrs. J. J. Sale & Sons, *Manchester.*

1345. Sheet of Menu and other Cards.
Designed by Wm. S. Black, *Edinburgh.*
Chromolithographed by Messrs. T. A. Constable & Co., *Edinburgh.*

1346. Four Lithograhic Plates from drawings on Stone by John Hawkins.
Executed for C. Spence Bate, Esq., F.R.S., for his report of the Macrurous Crustacea of H.M.S. "Challenger."
Lithographed by Messrs. Brendon & Sons, *Plymouth.*

1347. Chromo of a Foxglove, copied from the original water-colour drawing from nature.
By Miss Lilian Young.
Purchased by the Science and Art Department.
Chromolithographed by Mr. Griggs.

1348. Chromolithograph of H.R.H. the Prince of Wales.
By the Students of the Female Chromolithographic Studio, under the direction of Mons. Faustin, 33 Red Lion Square, London.

1349. Chromolithograph of H.M. the Queen.
By the Students of the Female Chromolithographic Studio, under the direction of Mons. Faustin, 33 Red Lion Square, London.

1350. Chromo of a Sunflower, from the original drawing from nature.
By Miss Emily Lucy Varley, *Bloomsbury.*
Chromolithographed by Mr. Griggs *Peckham.*

SECTION XVIII.

Illuminations, Illuminated Addresses, Title Pages of Books, Bookbindings, &c.

1351. Examination Certificate.
Designed by James Gamble, *Sheffield.*
Lithographed by C. Mateaux.

1352. Certificate for the University of Cambridge.
Designed by F. W. Andrew, *South Kensington.*
Lithographed by Dalziel Bros.

1353. Science Diploma, Ireland.
Designed by W. H. Wise.
Lithographed by H. Harrel, *Dublin.*

1354. Science Certificate.
Designed by R. Townroe, *Sheffield.*

1355. Ornamental Alphabet.
Designed by Godfrey Sykes, *Sheffield.*

1356. Two Title Pages.
Designed by John Watkins, *Birmingham and South Kensington.*
Lithographed by Petit.

1357. Six sheets of Ornamental Borders, Title-pages, &c., for "L'Art."
Designed by John Watkins, *Birmingham and South Kensington.*

1358. Two designs for Book Covers and design for Jewel Casket Lid.
By J. H. Fletcher, *Nottingham.*

SECTION XIX.

Etchings, Engravings on Wood, and Drawings for Engravings.

1359. Portrait of Oliver Cromwell, wood engraving.
By Charles Roberts, *Lambeth and South Kensington.*

1360. The Industrial Arts applied to War, from the cartoon.
By Sir Fredk. Leighton, P R.A., in the South Kensington Museum.
Engraved on wood by C. Roberts.

1361. Drawing in black and white, Child Playing Violin.
By L. Wain, *West London.*

1362. Chalk Drawing, Illustration for "The Frost Queen."
By Florence Reason, *Bloomsbury.*

1363. Type of Beauty.
By Sir F. Leighton, P.R.A.
Engraved on Wood by C. Roberts.

1364. The Dead Christ.
Painted by Phillippe de Champaigne.
Engraved on steel by W. A. Cox, after Rosells, under the direction of Mr. John Ballin.

1365. Crossing the Sarda, an incident of the tour in India of H.R.H. the Prince of Wales.
By Herbert Johnson, *St. Martin's.*

1366. The Illuminations at Calcutta in honour of H.R.H. the Prince of Wales.
By Herbert Johnson, *St. Martin's.*

1367. Portrait.
By C. Roberts, *Lambeth and South Kensington.*

1368. Ascending a Pyramid, drawing in black and white.
By Herbert Johnson, *St. Martin's.*

1369. Sheet of drawings in black and white.
By Charles O. Murray, *Edinburgh.*

1370. An Incident in the Bombardment of Alexandria, drawing in black and white.
By Alfred Pearse, *West London.*

1371. Types of the Mahdi's Followers.
By Alfred Pearse, *West London.*

1372. The Shell.
By Davidson Knowles, *West London.*

1373. The Birth-day Tree, drawing in black and white.
By Davidson Knowles, *West London.*

1374. "Cavalry Fight at the Battle of Maiwand."
By Alfred Pearse, *West London.*

1375. "Breaking the News," drawing in black and white.
By Alfred Pearse, *West London.*

1376. "The Nordenfeldt Gun in Action," drawing in black and white.
By Alfred Pearse, *West London.*

1377. "Christmas Eve," drawing in black and white.
By William S. Black, *Edinburgh.*

1378. "H.R.H. The Prince of Wales and Staff crossing a Nullah," original water-colour drawing.
By Herbert Johnson, *St. Martin's.*

1379. "The Spring of Civilization," drawing in black and white.
By J. Moyr Smith, *Glasgow and South Kensington.*

1380. "The Tambourine Player."
Designed and lithographed for "Decoration," by J. Moyr Smith, *Glasgow and South Kensington.*

1381. "The Magadis Player."
Designed and lithographed for "Decoration."
By J. Moyr Smith, *Glasgow and South Kensington*

1382. Portrait of Mon. de Lesseps, drawing in black and white.
By T. Walter Wilson, *South Kensington.*
(Lent by the Proprietors of the *Graphic.*)

1383. Five Frames of Portraits for the "Dramatic Notes."
Executed by T. Walter Wilson, *South Kensington.*
Published by David Bogue, *London.*

1384. The Dutch Admiral, De Ruyter, after the picture by Franz Hals.
Etched by C. P. Slocombe, *Spitalfields and Somerset House.*
(Lent by R. Dunthorne, Vigo Street.)

1385. "Child and Geese," etching.
Executed by C. O. Murray, *Edinburgh.*

1386. "Home," after the picture by S. E. Waller.
Etched by F. A. Slocombe, *South Kensington.*
(Lent by the Fine Art Society, Bond Street.)

1387. "Sir Rupert Kettle," after the picture by Frank Holl, R.A.
Etched by C. P. Slocombe, *Spitalfields and Somerset House.*
(Lent by R. Dunthorne, Vigo Street

1388. "Stoke Pogis Church."
Etched by F. A. Slocombe, *South Kensington.*
(Lent by the Fine Art Society, Bond Street.)

1389. "Major-General Sir Henry Rawlinson, K.C.B.," after the picture by Frank Holl, R.A.
Etched by C. P. Slocombe, *Spitalfields, Somerset House.*
(Lent by R. Dunthorne, Vigo Street.)

1390. "Her Grace."
After the picture by John Pettie, R.A.
Etched by C. P. Slocombe, *Spitalfields and Somerset House.*
(Lent by R. Dunthorne, Vigo Street.)

1391. A Sylvan Road.
Etched by F. A. Slocombe, *South Kensington.*
(Lent by the Fine Art Society, Bond Street.)

1392. A Pleasant Shady Lane.
Etched by F. A. Slocombe, *South Kensington.*
(Lent by the Fine Art Society, Bond Street.)

1393. A Series of Views in the South Kensington and Bethnal Green Museums.
Etched by John Watkins, *Birmingham and South Kensington.*

1394. "Lazy Moments."
By John Sargeant Noble, *West London.*
Etched by V. Lhuillier.

1395. "Returned from Sport."
By John Sargeant Noble, *West London.*
Etched by C. O. Murray, *Edinburgh.*

1396. "Left Lonely."
An original etching by Charles O. Murray, *Edinburgh.*

1397. "Quiet Pets."
An etching after Alma Tadema, R.A.
By Charles O. Murray, *Edinburgh.*

1398. "The Cornfield."
An etching by Frank McFadden, *Southampton and South Kensington.*

1399. Water Colour Drawings of portions of the contents of a Viking's Grave, opened in the Isle of Colonsay, time 1812.
Executed as Illustrations for Publication in the "Archæologia," by the Society of Antiquaries of *London.*
Painted by Miss Rosa Wallis, *South Kensington.*
Lent by the Council of the Society of Antiquaries, *London.*

1400. "Karlavagn."
An original Drawing by J. Moyr Smith, *Glasgow and South Kensington.*
Engraved in "Decoration."

1401. Head of a Girl. Study in Chalk.
By Miss Ida Lovering, *Bloomsbury.*
(Lent by Her Majesty The Queen.)

1402. Three Pen and Ink Drawings.
By J. Moyr Smith, *Glasgow and South Kensington.*

SECTION XX.

Painted Photographs of Objects of Decorative Art.

1403. Painted Photograph of Triptych. Limoges Enamel on copper. By Nardon Penicaud. French. 1499–1513. Original in the South Kensington Museum.

1404. Painted Photograph of Dagger and Sheath, mounted with jewelled gold; rows of loose pearls in blade. Original in the Prince of Wales's Indian Collection.

1405. Painted Photograph of Shield; Rhinoceros hide, enamelled, and mounted with jewelled gold. Original in the Prince of Wales's Indian Collection.

1406. Painted Photograph of Limoges Enamel dish. Subject: Apollo and the Muses. By Martial Courtois. 16th century. Original belonging to Sir Richard Wallace, Bart., K.C.B.

1407. Painted Photograph of back of dish. Limoges Enamel. By Martial Courtois. 16th century. Original belonging to Sir Richard Wallace, Bart., M.P.

1408. Painted Photograph of Letter Case. Gold embroidery, jewelled. Original in the Prince of Wales's Indian Collection.

1409. Painted Photograph of Scent Bottle and Stand. Gold enamelled and jewelled. Jeypore. Original in the Prince of Wales's Indian Collection.

1410. Painted Photograph of Shield. Steel, enamelled and set with diamonds, with jewelled silk pendants. Original in the Prince of Wales's Indian Collection.

1411. Painted Photographs of Sèvres porcelain vase, made to the order of the Empress Catharine II. of Russia as a present to King Gustavus III. of Sweden in 1780. Original in the Jones Collection, South Kensington Museum.

1412. Painted Photograph of French Cabinet. Japanese lacquer and ormolu. Late Louis XIV. period. Original in the Jones Collection, South Kensington Museum.

1413. Painted Photograph of Corner Table. Boule work with ormolu mounts. French. Period of Louis XIV. Original in the Jones Collection, South Kensington Museum.

1414. Painted Photograph of Sécrétaire of kingwood marquetry, with Sèvres panels and ormolu mounts. French. Period of Louis XIV. Original in Jones Collection, South Kensington Museum.

1415. Painted Photograph of Porcelain Clock, with Gouthière ormolu mounts. Made for Queen Marie Antoinette. French. About 1780. Original in the Jones Collection, South Kensington Museum.

1416. Painted Photograph of Boule Table. Probably designed by Bérain. French. Period of Louis XIV. Original in the Jones Collection, South Kensington Museum.
Painted by J. I. Williamson, *South Kensington.*
(Lent by the South Kensington Museum.)

1417. Painted Photograph of Triptych, champlevé enamel. German. 13th century. Original in the South Kensington Museum.

1418. Painted Photograph of Shrine or Reliquary. Gilt Copper, with enamelled details and ivory carvings. Rhenish-Byzantine. About 1150. Original in the South Kensington Museum.

1419. Painted Photograph of Triptych or Retable Gilt Metal, enamelled and jewelled. German. 12th century. Original in the South Kensington Museum.

1420. Painted Photograph of Chalice, silver gilt. German. Middle of 15th century. Original in the South Kensington Museum.

1421. Painted Photograph of Triptych, carved ivory. The Virgin and Saints. Venetian. 14th century. Original in the South Kensington Museum.

1422. Painted Photograph of Casket, carved ivory. Byzantine. 12th or 13th century. Original in the South Kensington Museum.

1423. Painted Photograph of Jug, stoneware, mounted in silver. German. 16th century. Original in the South Kensington Museum.

1424. Painted Photograph of Cup, rock crystal, silver-gilt mounting. Engraved with figures of Neptune, Amalthæa, and a phœnix. Italian. About 1600. Original in the South Kensington Museum.

1425. Painted Photograph of Navette, or Incense Holder. Crystal, set in silver, jewelled and gilt. Spanish? About 1540–50. Original in the South Kensington Museum.

1426. Painted Photograph of Cup. Cocoa-nut, mounted in silver, chased and gilt. German. Dated 1815. Original in the South Kensington Museum.

1427. Painted Photograph of Casket. Ivory, mounted in chased silver of 17th century. Spanish? 10th or 11th century. Original in the South Kensington Museum.

1428. Painted Photograph of the "Veroli Casket." Carved ivory. Byzantine. 10th or 11th century. Original in the South Kensington Museum.

1429. Painted Photograph of Reliquary. Gilt copper, jewelled, set with plaques of enamels and niello. French? 14th century. Original in the South Kensington Museum.

Painted by J. Randall, *South Kensington.*

(Lent by the South Kensington Museum.)

1430. Painted Photographs of Limoges Enamel Dish. The triumph of Galatea, after Raphael. French. 16th century. Original belonging to Sir Richard Wallace, Bart., K.C.B.

Painted by T. Walter Wilson, *South Kensington.*

(Lent by the South Kensington Museum.)

1431. Painted Photograph of Embroidered Cope. Spanish. 13th century. Original formerly in the College of Daroca, Aragon, but now in the National Archæological Museum, Madrid.

1432. Painted Photograph of Tapestry from St. Mary's Hall, Coventry. Flemish. Late 15th or early 16th century.

1433. Painted Photograph of Hood of a Cope. Original formerly in the Royal Convent of the Escurial, but now in the Royal Palace Madrid.

Painted by Miss Harriett Skidmore, *Stourbridge and South Kensington.*

(Lent by the South Kensington Museum.)

1434. Painted Photograph of Orphrey of Cope. Spanish. 13th century. Original formerly in the College of Daroca, Aragon, but now in the National Archæological Museum, Madrid.

Painted by Miss Rosa Wallis, *South Kensington.*

(Lent by the South Kensington Museum.)

1435. Painted Photograph of the Upper Cover of a Book of the Gospels, the property of the Earl of Ashburnham.

1436. Painted Photograph of the Under Cover of a Book of the Gospels, the property of the Earl of Ashburnham. Painted for the Council of the Society of Antiquaries, London, for reproduction with the above in Chromolithography as illustrative to the "Monumenta Vetusta."

Painted by Miss Rosa Wallis, *South Kensington.*

(Lent by the Council of the Society of Antiquaries, London.)

SECTION XXI.

Architectural Drawings, Designs, and Models of Buildings, &c.

1437. Residence, erected near Pontypridd by H. L. Grover, Esq.

Designed by Edwin Seward, R.C.A., *Cardiff.*

1438. Preparatory School, Royal Masonic Institution for Boys, Wood-green.

Designed by A. W. Cross, *Hastings and St. Leonards.*

1439. Original Design of the Cardiff Free Library, Schools for Science and Art and Museum.

By Edwin Seward, R.C.A., *Cardiff.*

1440. Longitudinal and Transverse Sections, West and South Elevations, and Perspective Views of the Hastings Infirmary.

Designed by A. W. Cross, *Hastings and St. Leonards.*

1441. Exterior View of the New Church of the Oratory, South Kensington.

Designed by Herbert A. Gribble, *Plymouth and South Kensington.*

1442. Interior View of the New Church of the Oratory, South Kensington.

Designed by Herbert A. Gribble, *Plymouth and South Kensington.*

1443. View of the Sanctuary of the New Church of the Oratory, South Kensington.

Designed by Herbert A. Gribble, *Plymouth and South Kensington.*

1444. View of the Altar in the Chapel of St. Philip Neri, in the New Church of the Oratory, South Kensington.

Designed by Herbert A. Gribble, *Plymouth and South Kensington.*

1445. Design for Roman Catholic Cathedral.
By Herbert A. Gribble, *Plymouth and South Kensington.*

1446. Design for a Country Residence, front elevation.
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1447. Design for a Country Residence, front elevation.
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1448. Design for a Country Residence, section.
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1449. Design for a Collegiate School, east elevation.
By F. W. Woodhouse, *South Kensington.*

1450. East Door of St. Paul's Cathedral.
By W. P. Watson, *South Kensington.*

1451. Two Bays of Nave of Durham Cathedral.
By Philip Hall, *Durham.*

1452. Design for Cathedral.
By H. J. Smith, *Nottingham.*

1453. Photograph of West Doorway of St. Giles's Cathedral, Edinburgh.
By W. Birnie Rhind, *Edinburgh.*

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Miscellaneous Articles not included in any other Section.

1454. Series of Published Books on Plant Form.
By F. E. Hulme.
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1455. Specimen of Book-Binding.
Designed by E. Seward, R.C.A., *Cardiff.*

1456. Lessons in Figure Painting.
By Misses B. McArthur and Jennie Moore, *Bloomsbury.*

1457. Six Specimens of backs of playing cards.
Designed by H. Lyndon, *West London.*

1458. Study of Flowers.
By William Suthers, *South Kensington.*

The following artists were engaged upon the decoration of "Old London," erected by Messrs. Campbell, Smith, and Campbell:
J. Simkin, *Lambeth and West London.*
A. Finlayson, *Glasgow.*
M. Southall, *Bishopsgate.*
J. McDonald, *West London.*
J. Pontis, *South Kensington.*
J. E. Campbell, *Lambeth and West London.*

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GENERAL SIR ARCHIBALD ALISON, BART., K.C.B., 770.

SIR RICHARD WALLACE, BART., M.P., 800.

THE RIGHT HON. JOHN BRIGHT, M.P., 768.

SIR P. CUNLIFFE-OWEN, K.C.M.G., C.B., C.I.E., 232, 385, 709.

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MRS. BRIGHTWYN, Stanmore, 32.

B. E. FLETCHER, ESQ., Marlingford Hall, Norwich, 823.

THOMAS HAWKSLEY, ESQ., C.E., F.R.S., 730.

JOHN LOMAX, ESQ., Manchester, 801.

MRS. T. DIX PERKIN, Harrow, 764.

JOHN POLSON, ESQ., Paisley, 700.

J. D'AGUILAR SAMUDA, ESQ., M.P., 728.

STUART SAMUEL, ESQ., 569.

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Stoke-on-Trent, West London, South Kensington.

ADAM, PETER. 1140, 1141, 1142, 1143, 1146, 1147, 1148, 1149, 1150, 1151.
Attended 1868 to 1876, 1876 to 1877.
Kidderminster and South Kensington.

ADAMS, EDWARD F., 1194.
Attended 1872 to 1878.
Kidderminster.

ADAMS, FRANK E., 1076, 1106, 1119, 1307.
Attended 1878 to 1884.
Macclesfield.

ADAMS, JAMES, 1076.
Attended 1845 to 1849, 1850.
Coventry and Manchester.

ADAMS, MATILDA S., 104.
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ADAMSON, WILLIAM, 55.
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ADEY, WILLIAM, 503.
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AITKEN, MARGARET, 122.
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ALBROW, OSCAR R., 609, 752, 911, 412.
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ALCOCK, BEATRICE, 847, 1321.
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ALEXANDER, J., 1190, 1193.
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BAKER, THOS., 780.
Attended 1864 to 1869.
Coventry.

BALL, EDITH H., 72.
Attended 1880 to 1884.
Lambeth.

BALL, SUSAN, 1032, 1048, 1097.
Attended 1866 to 1870.
Dublin Metropolitan.

BANKS, W. H., 753, 856.
Attended 1872 to 1884.
Rotherham.

BARKER, ALICE M., 83.
Attended 1881 to 1884.
Lambeth.

BARKER, CLARA S., 105.
Attended 1876 to 1878.
Lambeth.

BARKER, GEORGE, 1212, 1220.
Attended 1870 to 1873.
Kidderminster.

BARLOW, FLORENCE E., 147.
Attended 1873 to 1881.
Lambeth and City of Guilds Institute.

BARLOW, MISS, 98, 123.
Attended?
Lambeth.

BARON, WILLIAM, 136.
Attended?
Lambeth and South Kensington.

BATES, DAVID, 205.
Attended 1856 to 1864, 1872.
Worcester.

BATHGATE, GEORGE, 12.
Attended 1875 to 1879.
Edinburgh.

BANGHAM, JOSEPH, 391.
Attended?
Coalbrookdale.

BAUMGARTNER, MARY, 1130.
Attended 1879 to 1884.
Great Yarmouth.

BAYNTON, H., 786.
Attended 1873 to 1884.
Coventry.

BEATTIE, CHALLEN, 599, 676 to 691, 698.
Attended 1859 to 1860.
Birmingham.

BEAUPRÉ, C. J., 228, 876, 1279, 1308.
Attended 6 years, 1882 to 1883.
West London and South Kensington.

BECK, ACIDALIA, 106.
Attended 1881 to 1884.
Lambeth.

BEDFORD, GEORGE, 949.
Attended 1866 to 1877.
Torquay.

BEECH, DANIEL, 514.
Attended 1872 to 1875.
Stourbridge.

BENNETT, REUBEN, 1259.
Attended 1869 to 1870.
Manchester.

BERGIN, ISABELLA C., 913, 1099.
Attended 1868 to 1881.
Dublin.

BERKS, EDWARD, 432.
Attended ?
Stoke-on-Trent.

BETTS, JESSIE, 25.
Attended 1877 to 1884.
Weymouth.

BILTON, LOUIS, 245, 246, 323, 324, 432.
Attended 1873 to 1884.
Stoke-on-Trent and Fenton.

BINNS, ALBERT, 339.
Attended 1879 to 1882.
Worcester.

BIRAM, MISS JANE, 852.
Attended 1858 to 1884.
Sheffield.

BIRCUMSHAW, LOUIS, 1004, 1300.
Attended 1877 to 1844.
Nottingham.

BISHOP, ROBERT H., 993
Attended 1869.
Nottingham.

BLACK, J. J., 1066, 1067, 1068, 1071, 1072, 1073, 1074, 1075, 1180, 1188, 1189, 1191.
Attended 1844 to 1851.
Manchester.

BLACK, WILLIAM S., 1328, 1330, 1331, 1345, 1377.
Attended 1870 to 1879.
Edinburgh.

BOARDMAN, WILLIAM, 213.
Attended 1884.
Burslem.

BONE, HERBERT, 1250.
Attended 1870 to 1876.
Lambeth.

BOOTH, JAMES, 557.
Attended 1869 to 1881.
Sheffield.

BOOTH, JOHN, 1113.
Attended 1877 to 1884.
Macclesfield.

BOSS, WM. G., 526, 541.
Attended 1867 to 1872 and 1876 to 1880.
Edinburgh.

BOWCHER, A. W., 923, 927, 931.
Attended 1878 to 1883.
South Kensington.

BOWCHER, FRANK, 808.
Attended 1881 to 1884.
South Kensington.

BOWEN, ELIZA F., 125.
Attended 1878 to 1884.
Lambeth.

BOYLE, J. F., 350, 896.
Attended 1867 to 1878.
Dublin.

BRADBURN, W., 383.
Attended ?
Coalbrookdale.

BRADBURN, JOHN, 58, 738, 1325.
Attended 1872 to 1883 and 1883 to 1884.
Coalbrookdale and South Kensington.

BRADLEY, JAMES, 207.
Attended 1862 to 1877.
Worcester.

BRADLEY, SARAH A., 381, 531.
Attended 1849 to 1853.
Bloomsbury.

BRATT, JOHN, 210, 214.
Attended 1881 to 1883.
Burslem.

BRAY, NICHOLAS, 707.
Attended 1855 to 1866.
Sheffield.

BRETT, MARY, 327.
Attended 1863 to 1872.
Dublin.

BRETT, FRANCIS, MISS, 330, 1116, 1315.
Attended 1869 to 1873.
Dublin.

BRIDGEWATER, H. S., 621.
Attended 1881 to 1884.
Dudley.

BRIGGS, JOHN, 358, 410, 855.
Attended 1874 to 1884.
Edinburgh.

BRINDLEY, CHARLES A., 1134, 1135, 1228.
Attended 1873 to 1874, 1874 to 1877.
Kidderminster and South Kensington.

BROADHEAD, GEORGE, 957.
Attended 1866 to 1870.
Nottingham.

BROOD, JOHN, 440.
Attended 1874 to 1880.
Lambeth.

BROWN, GERTRUDE L., 1132.
Attended 1872 to 1876, 1878 to 1884.
Great Yarmouth.

BROWN, MISS J. E. A., 192, 809, 849.
Attended 1860 to 1866.
Cirencester.

BROWN, JOHN, 1203, 1244.
Attended 1878 to 1844.
Glasgow.

BROWN, T. S., 729, 730.
Attended 1855 to 1856.
Finsbury.

BROWNING, MARION, 1001, 1016, 1025
Attended 1878 to 1883.
Salisbury.

BROWNSWORD, J. J., 1239.
Attended 1876 to 1884.
Derby.

BUCKNALL, WILLIAM, 986.
Attended 1874 to 1881.
Nottingham.

BUDD, HENRY A. J., 1210, 1310.
Attended 1870 to 1873.
Lambeth.

BUDDEN, ALICE E., 124.
Attended 1878 to 1884.
Lambeth.

BULLETTI, SIGNOR, 826.
School of Art Wood Carving.

BURGESS, ROSETTA C., 1131.
Attended 1874 to 1884.
Great Yarmouth.

BURLTON, ALICE LOUISA, 99.
Attended 1877 to 1878.
Lambeth.

BURNETT, T. S., 936, 937.
Attended 1866 to 1876.
Edinburgh.

BURR, GEORGINA D., 153.
Attended 1878 to 1884.
Lambeth.

BUSH, J. W., 843.
Attended 1867 to 1869.
Bath.

BUTLER, FRANK, 160.
Attended 1874 to 1884.
Lambeth.

BUTLER, JAMES, 988
Attended 1875 to 1883.
Nottingham.

BUTTERS, MARY, 130.
Attended 1881 to 1884.
Lambeth.

BUTTERTON, MARY, 161.
Attended 1874 to 1884.
Lambeth.

BUXTON, S., 380.
Attended 1847 to 1849.
Stoke-on-Trent.

CALLOWHILL, CLARENCE, 200.
Attended ?
Worcester.

CALLOWHILL, JAMES, 194, 195, 196, 197, 198, 199, 201, 202, 203, 204.
Attended ?
Worcester.

CALLOWHILL, JAMES CLARENCE, 359, 360, 1326.
Attended 1878 to 1884.
Worcester.

CALLOWHILL, SYDNEY, 199, 200.
Attended 1878 to 1884.
Worcester.

CAMERON, MARY, 1098.
Attended 1881 to 1884.
Dublin Metropolitan.

CAMM, T. W., 530.
Attended 1855 to 1860.
Birmingham.

CAMPBELL, CHARLES, 413, 425, 1289, 1291, 1296, 1323.
Attended 1860 to 1864, 1866 to 1869.
Lambeth and West London.

CAMPBELL, DAVID, 1144, 1155.
Attended 1879, 1880 to 1884.
Glasgow and Halifax.

CAMPBELL, J. E., 1459.
Attended ?
Lambeth and West London.

CAMPBELL, MISS A., 80.
Attended 1883, 1884.
Lambeth.

CANTON, MISS SUSAN R., 915.
Attended 1871 to 1878.
Bloomsbury.

CANTY, LUCY M., 90.
Attended 1883, 1884.
Lambeth.

CAPES, MARY, 88, 92.
Attended 1874 to 1884.
Lambeth.

CAPEY, ARTHUR, 268, 271, 279, 284, 286.
Attended 1879 to 1884.
Burslem.

CARDER, FREDERICK, 504, 508, 509.
Attended 1879 to 1884.
Stourbridge.

CARPENTER, ALFRED, 890.
Attended 1882 to 1884.
West London.

CARR, JOHN M., 994, 999.
Attended 1876 to 1878.
Nottingham.

CARTER, C. J., 1212.
Attended 1873 to 1884.
Kidderminster.

CARTER, G. A., 726, 727, 728, 769.
Attended 1863 to 1868.
Lambeth.

CARTWRIGHT, ARTHUR, 1087, 1088, 1089.
Attended 1875 to 1884.
Macclesfield.

CARTWRIGHT, HERBERT, 220, 221, 224, 263, 264, 270, 276, 283, 289.
Attended 1870 to 1879.
Burslem.

CANTRELL, JOHN, 1212.
Attended ?
Kidderminster.

CHADBOURNE, STEPHEN L., 1314.
Attended 1875, 1880 to 1884.
Nottingham.

CHALLIS, MARGARET, 64.
Attended 1875 to 1877.
Lambeth.

CHAMBERS, MICAH, 1166, 1167.
Attended 1854 to 1859.
Durham.

CHANDLER, EMILY, 85.
Attended 1879 to 1884.
Lambeth and City and Guilds Institute.

CHATTAWAY, HERBERT, 617.
Attended 1869 to 1876.
Coventry.

CHILDE, ANDREW, 416.
Attended 1879 to 1884.
Coalbrookdale.

CHISHOLM, D., 825.
Attended 1869 or 1870.
South Kensington.

CHRIPPES, WALTER, 1219.
Attended 6 years.
West London.

CHURCHER, G. P., 1309.
Attended?
South Kensington.

CLARKE, JAMES, 1, 6.
Attended?
South Kensington.

CLAYTON, E. W., 709.
Attended?
Sheffield.

CLEWS, JOHN, 977.
Attended 1875 to 1882.
Nottingham.

CLOW, J. J., 851.
Attended 1879.
Exeter.

CLULOW, W. J., 1104, 1105.
Attended?
Macclesfield.

COATES, WILLIAM, 950, 951.
Attended 1870 to 1878.
Nottingham.

COCKRILL, W. B., 910.
Attended 1867 to 1877.
Yarmouth.

COLEMAN, EDITH M., 74.
Attended 1881 to 1884.
Lambeth.

COLLIS, JANE J., 529.
Attended 1874 to 1883.
Salisbury.

COOK, MISS L. E. M., 853.
Attended 1881 to 1884.
Sheffield.

COOKE, ERNEST O., 33, 41.
Attended 1879 to 1884.
Nottingham.

COPE, J., 260.
Attended 1869.
Stoke-on-Trent.
Attended 1870 to 1871.
South Kensington.

COX, MARY, 352, 623.
Attended 1870 to 1880.
Worcester.

COX, W., 1364.
Attended?
School?

CRACKNELL, ELLEN K., 521, 731.
Attended 1877 to 1881.
Yarmouth.

CRAWLEY, MINA, 102.
Attended 1874 to 1880.
Lambeth.

CRICHTON, ALEX., 700.
Attended 1861 to 1866.
Edinburgh.

CRICHTON, JOHN, 701 to 705.
Attended 1860 to 1864.
Edinburgh.

CROSS, ALFRED W., 1438, 1440.
Attended?
Hastings and St. Leonards.

CROSSLEY, FREDERICK, 1 65, 1177.
Attended 1872 to 1876.
Halifax.

CURTIS, A. LILLIAN, 155.
Attended 1881 to 1883.

CUTTS, JOHN, 1041.
Attended 1870 to 1872.
Nottingham.

DALGLEISH, T. J., 604.
Attended 1870 to 1874.
Coventry.

DAVEY, ARTHUR J., 173, 295
Attended 1873 to 1884.
Torquay.

DAVIS, HARRY A., 492.
Attended 1877.
Dudley.

DAVIS, LOUIS, 1253.
Attended 1876 to 1884.
South Kensington.

DAVIS, LOUISA, 65.
Attended 1876 to 1878.
Lambeth.

DAVIS, MARY, 119.
Attended 3 years.
Lambeth.

DAVIS, OWEN W., 1260, 1261, 1274, 1311.
Attended 1862 to 1863.
West London.

DAVIS, WILLIAM, 329.
Attended 1879 to 1884.
Coalbrookdale.

DAWE, LAURA, 27.
Attended 1876 to 1882.
Plymouth.

DAWSON, JAMES E., 1110.
Attended 1877 to 1822.
Macclesfield.

DENLEY, MARY, 149, 334, 336, 362, 363, 367, 370, 1207, 1218, 1224, 1235.
Attended 1876 to 1884.
Lambeth.

DENNIS, ADA, 70.
Attended 1880 to 1884.
Lambeth.
City and Guilds Institute.

DEWSBERY, DAVID, 209, 291, 293, 294, 296, 297, 298.
Attended 1870 to 1877.
Burslem.

DEWSON, THOMAS, 811 to 817.
Attended 1854 to 1859.
Manchester.

DICKESON, AGNES J., 974, 987, 1022.
Attended 1872 to 1875, 1878 to 1884.
Dover.

DIXON, W. H., 811 to 817.
Attended 1858 to 1860.
Broseley.

DOBBS, FREDERICK H., 985.
Attended 1871 to 1877.
Nottingham.

DODDS, C. J., 58.
Attended 1879 to 1884.
South Kensington.

DONOHUE, THOMAS J., 1112.
Attended 1878 to 1884.
Macclesfield.

DORAN, THOMAS E., 1109.
Attended 1879 to 1884.
Macclesfield.

DOUGHTY, EDWIN, 1007.
Attended 1867 to 1869.
Nottingham.

DRAKE, GEORGE E., 956, 1096, 1298, 1301, 1303, 1304.
Attended?
Nottingham.

DUBLIN MUSEUM OF SCIENCE AND ART, 962.

DUCK, DANIEL, 1153, 1163.
Attended 1868 to 1873.
Coventry and Kidderminster.

DUFFIELD, E., 545 to 549.
Attended 1868 to 1884.
Birmingham.

DUNLOP, J., 1302.
Attended?
Kilmarnock.

DURTNALL, BEATRICE M., 73.
Attended 1875 to 1884.
Lambeth.

DURTNALL, JOSEPHINE A., 154.
Attended 1882 to 1884.
Lambeth.

DURTNALL, LULU, 140.
Attended 1882 to 1884.
Lambeth.

DUTTON, THOMAS, 995.
Attended 1879 to 1881, 1884
Nottingham.

EASSIE, MRS., 368, 796.
Attended 1863 to 1878.
Gloucester.

ECKENSTEIN, ALICE, 86.
Attended 1880 to 1884.
Lambeth.

EDWARDS, LOUISA E., 103.
Attended 1876 to 1883.
Lambeth.

EDWARDS, T. G., 906.
Attended 1871 to 1879.
Sheffield.

ELLIOTT, FANNY, 76.
Attended 1875 to 1879.
Lambeth.

ELLIS, H. W., 1311.
Attended 1867 to 1870.
Cambridge.

ELWOOD, MARION, 979.
Attended 1876 to 1884.
Nottingham.

EMERTON, ELIZABETH, 134.
Attended 17 months.
Lambeth.

EMERY, T., 373.
Attended?
Stoke-on-Trent.

ERRINGTON, C. H., 780.
Attended 1865 to 1873.
Coventry.

EVANS, BERTHA, 121.
Attended 1877 to 1881, 1884.
Lambeth.

EVANS, JOHN A., 919.
Attended 1878 to 1883.
Gloucester.

EVANS, MISS, 48.
Attended?
South Kensington.

FACER, JABEZ, 459 to 471.
Attended 1860 to 1866.
Stourbridge.

FAULKS, HENRY, 569.
Attended 1879 to 1881.
Birmingham.

FELLOWS, H., 651 to 675.
Attended 1858 to 1859.
Birmingham.

FEMALE CHROMOLITHOGRAPHIC STUDIOS, STUDENTS OF, Royal Albert Hall and Red Lion Square, 1333, 1348, 1349.

FENNESY, MRS. (Emily Selous), 582.
Attended 1868 to 1873.
Bloomsbury.

FEREDAY, JOHN T., 493 to 499.
Attended 1867 to 1868.
Dudley.

FERNYHOUGH, GEORGE, 249, 252.
Attended 1870 to 1884.
Stoke-on-Trent.

FIDLER, F., 193, 630, 631, 746.
Attended 1867 to 1884.
Sheffield.

FIDLER, GIDEON M., 1221.
Attended 1873 to 1882.
Salisbury.

FINCHETT, THOS., 801.
Attended 1877 to 1884.
Manchester.

FINLAYSON, A., 1459.
Attended
Glasgow.

FINNEY, MRS. V. L., 37.
Attended 1882 to 1883.
South Kensington.

FIRTH, WILLIAM, 946, 947.
Attended?
Lambeth.

FISHER, ALEXANDER, 30, 172.
Attended?
Torquay.

FISHER, JOHN, 558, 921.
Attended 1875 to 1883, and 1883 to 1884.
Sheffield and South Kensington.

FISHER, ELIZABETH, 129
Attended 1874 to 1877
Lambeth.

FLETCHER, JAMES, 1245.
Attended 1881 to 1884.
Glasgow.

FLETCHER, J. H., 1332, 1358.
Attended 1873 to 1884.
Nottingham.

FOLLIOTT, WILLIAM, 1050 to 1064.
Attended 1851 to 1857.
Spitalfields.

FORD, RICHARD, 308, 309, 316.
Attended 1878 to 1881.
Burslem.

FORSEY, EMILY A., 93.
Attended 1881 to 1884.
Lambeth.

FOSTER, ARTHUR, 1038, 1039, 1040, 1043.
Attended 1874 to 1878.
Nottingham.

FOSTER, JONATHAN, 1124.
Attended 1877, 1883.
Halifax and Bradford.

FOSTER, WILLIAM, 1215.
Attended 1879 to 1884.
Salisbury.

FOX, EDWIN, 601.
Attended 1855, and 1865 to 1866.
Birmingham and South Kensington.

FRAMPTON, EDWARD, 537, 538, 539.
Attended 1865 to 1868.
West London.

FREEMAN, THOS. F., 552 to 555, 722.
Attended 1874 to 1877.
Manchester.

FRENCH, ELIZABETH, 79.
Attended 1879 to 1882.
Lambeth.

FRIDAY, JAMES, 780, 785.
Attended 1863 to 1875.
Coventry.

FRITH, HENRY, 846.
Attended 1861 to 1863.
Gloucester.

FRITH, WILLIAM, (*See* Firth, William).

FROST, JOHN, 784.
Attended 1862 to 1869 and 1870 to 1873.
Coventry.

GAMBLE, JAMES, 174, 1351.
Attended 1852 to 1860.
Sheffield.

GANDY, JESSIE, 95.
Attended 1881 to 1884.
Lambeth.

GANDY, WALTER, 361.
Attended?
Lambeth.

GARBETT, ELLEN, 112.
Attended 1877 to 1880.
Lambeth.

GARBUTT, M., 612.
Attended 18 months.
West London.

GARDNER, JOHN, 21.
Attended 1874 to 1878.
Coventry.

GATER, J., 58.
Attended 1878 to 1882, 1882 to 1884.
Newcastle-under-Lyme and South Kensington.

GATHERCOLE, ELLEN, 109.
Attended 1882 to 1884.
Lambeth.

GIBBONS, FRANCIS, 190, 191, 949.
Attended 1869 to 1879, 1879 to 1881, 1881 to 1882.
Cirencester, South Kensington, Coalbrookdale.

GIBBONS, OWEN, 235, 326, 388, 390, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 407, 408, 411, 414, 415, 417, 418, 419, 420, 421, 422, 423, 424, 426, 427, 439, 759.
Attended 1860 to 1867 and 1867 to 1873.
Cirencester and South Kensington.

GIBBS, JAMES C., 366
Attended 1874 to 1884.
Worcester.

GIBSON, HENRY, 1137.
Attended?
South Kensington.

GINN, GERTRUDE, 341.
Attended 1879 to 1884.
Bloomsbury and East Herts.

GIRARDOT, MISS, 822.
Attended 1880 to 1883.
Farnham.

GOODYEAR, E., 500.
Attended 1878 to 1884.
Dudley.

GOODYER, HELEN, 998.
Attended 1875 to 1884.
Nottingham.

GOLDSACK, LILIAN, 139.
Attended 1883, 1884.
Lambeth.

GREEN, ALBERTA L., 97.
Attended 1879 to 1883.
Lambeth.

GREY, JANE WILLIS, 1337.
Attended 3 years.
S. Martin's, W.C.

GRIBBLE, HERBERT A., 1441, 1442, 1443, 1444, 1445.
Attended 1862 to 1866, 1866 to 1869.
Plymouth and South Kensington.

GRIMSHAW, HUGH, 1111.
Attended 1879 to 1882.
Macclesfield.

GROOME, ALICE, 131.
Attended 1877 to 1880.
Lambeth and South Kensington.

GULLAND, ELIZABETH, 1334.
Attended 1873 to 1877.
Edinburgh.

GURNER, H. T., 897.
Attended 1882 to 1884.
West London.

HADLEY, H. J., 354.
Attended?
Worcester.

HADLEY, JAMES, 194, 195, 196.
Attended 1851 to 1862.
Worcester.

HADLEY, LOUIS, 356.
Attended 1881 to 1884.
Worcester.

HADLEY, T., 206.
Attended?
School?

HAITÉ, G. C., 527, 1065, 1069, 1258, 1265, 1273, 1276, 1278, 1306, 1311, 1317.
Attended 1873.
Croydon.

HALL, B. A., 780.
Attended?
Coventry.

HALL, MRS., 437.
Attended?
Lambeth.

HALL, PHILLIP, 58, 1451.
Attended 1876 to 1882, 1882 to 1884.
Durham and South Kensington.

HALLAM, JESSIE (Mrs. Hubbah), 1002, 1006, 1014.
Attended 1866 to 1878.
Exeter.

HAMMOND, C. M. D., 11.
Attended?
Lambeth.

HAMMOND, EDWARD, 364, 372, 533, 1251, 1256.
Attended 1881 to 1884.
Lambeth and West London.

HAMMOND, THOMAS W., 958, 972, 973, 990.
Attended 1869 to 1878, 1881 to 1882.
Nottingham.

HANCOCK, ISABEL, 52.
Attended 1869 to 1876.
Bloomsbury.

HANCOCK, W. R. S., 959, 983.
Attended 1870 to 1876.
Nottingham.

HARDGRAVE, C., 536.
Attended 1869 to 1870.
South Kensington.

HARDING, WILLIAM, 1003.
Attended?
Nottingham.

HARDING, MORTIMER, 1227.
Attended 1880 to 1884.
Salisbury.

HARDY, WILLIAM, 970, 971, 1036.
Attended 1878 to 1883.
Nottingham.

HARE, GEORGE, 44, 47.
Attended 1875 to 1877, 1877 to 1884.
Limerick and South Kensington.

HAREY, SARAH MARY, 133.
Attended 1878 to 1881.
Lambeth.

HARPER, F., 696.
Attended 1879 to 1882.
Birmingham.

HARRISS, GEORGE, 1212.
Attended 1882 to 1884.
Kidderminster.

HARTLEY, STEPHEN, 278, 280, 281.
Attended 1882 to 1884.
Burslem.

HAUGHTON, LIZZIE, 132.
Attended 1877 to 1880.
Lambeth.

HAWARD, SYDNEY, 820.
Attended 1875.
South Kensington.

HAWKESLEY, EMILY, 120.
Attended 1879 to 1884.
Lambeth.

HAWKINS, JOHN, 1346.
Attended 1876 to 1881.
Plymouth.

HAY, THOMAS W., 1270, 1271, 1311, 1320.
Attended 1857 to 1859.
Edinburgh.

HAYES, ELLEN, 963.
Attended?
Ursuline Convent, Cork.

HAYS, ANNA, 118.
Attended 1 year 3 months.
Lambeth and St. Martins.

HEALD, FRANCIS B., 984.
Attended 1869 to 1871.
Nottingham.

HEATH, MARGARET A., 3, 939.
Attended 1877 to 1883.
Gloucester.

HEISE, EMILY S., 40, 991.
Attended 1877 to 1881, 1881 to 1884.
Birkenhead and Tranmere.

HENK, JOHN, 248, 250, 253, 325.
Attended 1863 to 1874.
Stoke-on-Trent and Fenton.

HENNEY, G. F., 58.
Attended 1879 to 1883, 1883 to 1884.
Birmingham and South Kensington.

HERAPATH, ALICE M., 87.
Attended 1880 to 1884.
Lambeth.

HERON, JAMES, 881.
Attended 1861 to 1865 and 1872 to 1878.
Edinburgh.

HEWITT, A., 58.
Attended?
South Kensington.

HILL, HENRY, 344.
Attended 1865 to 1875.
Boston.

HILL, JAMES, 514, 516, 518.
Attended 1864 to 1881.
Stourbridge.

HILL, MARGARET, 386, 405.
Attended 1860 to 1873.
Cork.

HILL, WILLIAM, 487 to 489.
Attended 1868 to 1869.
Stourbridge.

HINCHCLIFF, JESSIE, 145.
Attended 1880 to 1884.
Lambeth and City and Guilds Institute.

HITCHINS, ALFRED, 14, 49.
Attended 5 years.
South Kensington.

HOBBS, SAMUEL, 568.
Attended 1877 to 1879.
Long Acre, W.C.

HODGETTS, J., 485.
Attended 1871 to 1872.
Stourbridge.

HODGKINSON WILLIAM, 247 251, 257, 258.
Attended 1872 to 1884.
Stoke-on-Trent and Fenton.

HODKINSON, H. P., 563, 600.
Attended 1866 to 1867 and 1872 to 1875.
Coventry.

HOGG, HERBERT W., 714.
Attended 1872 to 1881.
Derby.

HOGGINS, JAMES, 1076, 1118, 1120, 1121.
Attended 1875 to 1879, 1881 to 1884.
Coventry and Macclesfield.

HOLGATE, J., 1214, 1263.
Attended 1866 to 1867.
Halifax.

HOLIDAY, THOS., 710.
Attended 1847 to 1854.
Edinburgh.

HOLLAND, MICHAEL, 960, 961.
Attended 1874 to 1876, 1879 to 1880.
Cork.

HOLLIS, BENJAMIN, 486.
Attended 1873 to 1874.
Dudley.

HOLLIS, ELIZABETH, 137.
Attended 1881 to 1884.
Lambeth.

HOLMES, GEORGE H., 1000.
Attended 1875, 1880 to 1884.
Nottingham.

HOLMES, MARY, 355.
Attended 1869 to 1884.
Great Yarmouth.

HOLT, MISS J. C., 835.
Attended?
School of Art Wood Carving.

HOMAN, GERTRUDE, 46.
Attended 1880 to 1883.
West London.

HORNE, AGNES, 75.
Attended 1880 to 1883.
Lambeth.

HORSEFIELD, HENRY, 1015.
Attended 1872 to 1879.
Nottingham.

HORSMAN, FRANCIS, 821.
Attended?
Leeds.

HOWARD, CHARLES T., 28.
Attended 1876 to 1884.
Boston.

HOWITT, MISS A., 839.
Attended 1881 to 1884.
Sheffield.

HUGHES, CATHERINE, 127.
Attended 1882, 1883.
Lambeth.

HUGHES, JOHN, 306, 307.
Attended 1875 to 1880.
Burslem.

HULME, F. EDWARD, 1454.
Attended 1857 to 1863.
South Kensington.

HUMPHRIES, C., 62.
Attended 1874 to 1875.
South Kensington.

HUSSEY, J. S., 1213.
Attended 1870 to 1883.
Kidderminster.

ILLSTON, G. A., 562, 573, 632, 861.
Attended 1851 to 1869, and 1858 to 1876.
Rotherham and Sheffield.

INGALL, J. SPENCE, 1045.
Attended 1874 to 1882.
Barnsley.

IRWIN, ELIZABETH, 1010, 1123.
Attended 1865 to 1876.
Dublin.

IRWIN, or URWIN, MISS M. L., 838.
Attended 1881.
School of Art Wood Carving.

IRWIN, MARCELLA, 1005, 10211, 129, 1208.
Attended 1865 to 1876.
Dublin.

JACKSON, FRANK G., 697, 698.
Attended 1848 to 1852, and 1854 to 1860.
Birmingham.

JACOB, ELLA, 175, 888.
Attended 1879 to 1884.
Salisbury.

JAMES, CHARLOTTE, 1340.
Attended 1860 to 1863.
Bloomsbury.

JENKINSON, THOS., 524.
Attended 1868 to 1870.
Manchester.

JENNINGS, ARTHUR, 955.
Attended 1874 to 1878.
Nottingham.

JESSOP, C. H., 556.
Attended 8¼ and 7¼ years.
Sheffield and Derby.

JESSOP, F. C., 574, 608.
Attended 1873 to 1884.
Rotherham.

JOHNSON, HERBERT, 1365, 1366, 1368, 1378.
Attended 2½ years.
St. Martin's, W.C.

JOHNSON, WILLIAM, 303.
Attended 1876 to 1878.
Stoke-on-Trent.

JONES, H. OVERTON, 290.
Attended 1876 to 1878.
South Kensington.

JONES, WILLIAM, 1046, 1047, 1179, 1187, 1200, 1201, 1290.
Attended 1858 to 1876.
Manchester.

JORDAN, FRANCES LYDIA, 1009, 1127.
Attended 1867 to 1881.
Dublin.

JOYCE, MARY, 966, 996.
Attended 1872 to 1884.
Dover.

JUNCK, OSCAR, 926.
Attended 1870 to 1876.
West London.

KAVANAGH, JOSEPH, 1100.
Attended 1869 to 1877.
Dublin Metropolitan.

KEEN, ROSA, 116.
Attended 1877 to 1880.
Lambeth.

KELSALL, A. R., 212.
Attended 1882 to 1884.
Burslem.

KERR, ELEANOR, 1128.
Attended 1880 to 1884.
Dublin.

KERR, THOMAS, 1095.
Attended 1877 to 1884.
Macclesfield.

KERSHAW, JOSEPH, 572.
Attended 1856 to 1859.
Coalbrookdale.

KING, ADELINE, 1023, 1024.
Attended 1871 to 1884.
Salisbury.

KING, HARRY, 1318.
Attended 1878 to 1884.
Nottingham.

KING, LYDIA B., 36.
Attended 1881 to 1884.
Bloomsbury.

KINGDON, MAUD J., 1013, 1026.
Attended 1875 to 1884.
Exeter.

KINGMAN, GEORGE, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1217, 1222, 1226, 1230, 1233, 1234.
Attended 1858 to 1866, 1866 to 1868, 1868 to 1870.
Bath, South Kensington, Kidderminster.

KIRK, THOMAS, 992.
Attended 1877 to 1880.
Nottingham.

KIRKWOOD, HENRY B., 712, 772 to 778.
Attended 1867 to 1870.
Edinburgh.

KIRTLAND, G. M., 725.
Attended ?
South Kensington.

KNIGHT, JOHN, 866, 875.
Attended 1872 to 1882.
Nottingham.

KNOWLES, DAVIDSON, 1372, 1373.
Attended 1872 to 1881.
West London.

KNY, THEODORE, 490.
Attended ?
Stourbridge.

LAMB, JOHN, 1287.
Attended 1870 to 1871.
West London.

LAMBERT, GEORGE F., 234, 236, 237, 238, 239, 240, 337, 343, 348.
Attended 1864 to 1866, 1879 to 1882.
St. Martin's, W.C., and Derby.

LAMBERT, G. F., 349, 353
Attended 1874 to 1877.
Worcester.

LANE, JOHN QUILLER, 1115.
Attended 1871 to 1873, 1876 to 1877, 1879 to 1881 at Belfast, and 1873 to 1876 at South Kensington.

LANE, RICHARD, 949.
Attended?
Glasgow.

LANGLEY, LEONARD, 305.
Attended 1874 to 1878.
Burslem.

LARCHER, ULRIQUE A., 69.
Attended 7 years.
Lambeth.

LAWSON, W. A., 1202.
Attended 1870 to 1873.
Glasgow.

LAWSON, J., 575.
Attended 1874 to 1884.
Sheffield.

LEDWARD, RICHARD, A., 384, 385.
Attended 1871 to 1879.
Burslem and South Kensington.

LEE, FRANCIS E., 143.
Attended 1876 to 1880.
Lambeth.

LEE, HARRIETTE E., 108.
Attended 1877 to 1881.
Lambeth.

LEES, GEORGE, 968, 1231.
Attended 1862 to 1870, 1880 to 1884.
Kidderminster.

LEIGHTON, FREDERICK, 58, 340, 351, 387, 863, 1324, 1342.
Attended 1878 to 1883, and 1883 to 1884.
Coalbrookdale and South Kensington.

LEIGHTON, SIR FREDERICK, 1360, 1363.
Attended?
School?

LEISHMAN or LISHMAN, JAMES T., 1125.
Attended 1883.
Bradford.

LETHEREN, CHAS., 583 to 586, 614
Attended 1880 and 1877 to 1879 and 1882 to 1883.
Cheltenham, Christ Church, and St. Mark's.

LETHEREN, WM., (Senior), 559, 567, 629.
Attended 1865 to 1867.
Cheltenham.

LETHEREN, W. H., 571.
Attended 1877 to 1879 and 1880.
Christ Church and Cheltenham.

LEWIS, FLORENCE, 96, 100, 159, 434, 436.
Attended 1876 to 1880.
Lambeth.

LEWIS ISABEL, 68.
Attended 2 years.
Lambeth.

LEWIS, MARY AGNES, 1341.
Attended 1878 to 1883.
Lambeth.

LHUILLIER, V., 1394.
Attended?
School?

LILLIE, B. A., 1311.
Attended 1877.
West London.

LLEWELLYN, S. H., 35.
Attended?
South Kensington.

LLOYD, JULIANNA, 1257.
Attended 1878, 1880 to 1882.
West London.

LLOYD, MARY, 912.
Attended 1880 to 1884.
Dublin.

LOCK, EDWARD, 845.
Attended 1880.
Bath.

LOCK, MARY, C., 7.
Attended 1868 to 187?
Dorchester.

LONDON, EMILY ALICE 82.
Attended 1880 to 1884.
Lambeth.

LONG, NATHANIEL, 818.
Attended 1881 to 1884.
Cork.

LONGBOTTOM, SHELDON, 180, 182, 184, 185, 186, 187, 189.
Attended 1871 to 1878.
Darlington.

LONGDEN, H., 630, 631, 854.
Attended 1847 to 1849.
Sheffield.

LOVERING, IDA, MISS, 1401.
Attended 1873 to 1878.
Bloomsbury.

LUNN, RICHARD, 231, 232, 706, 715, 716, 748.
Attended 1857 to 1866, and 1866 to 1868.
Sheffield and South Kensington.

LUPTON, EDITH D., 758.
Attended 1875 to 1884.
Lambeth.

LYNDON, HERBERT, 1457.
Attended 1871 to 1876.
West London.

MACKENZIE, JOHN G., 737, 1018, 1033, 1044.
Attended 1877 to 1879, 1879 to 1881.
Belfast and South Kensington.

MADDOX, T. W., 593 to 597, 625.
Attended 1882 to 1884.
Birmingham.

MALTBY, CAROLINE, 1017.
Attended 1880 to 1883.
Bloomsbury.

MANLEY, ELEANOR, 1336.
Attended 1869 to 1873.
Bloomsbury.

MANNOCH, ALFRED, 1311.
Attended 1873 to 1874.
West London.

MANSELL, MARIANNE, 332, 519, 550, 789, 969, 1029.
Attended 1870 to 1873.
Lambeth.

MARSH, JAMES F., 229, 318, 319, 320, 321, 322.
Attended?
Burslem and Stoke.

MARSHALL, FRANK, 622.
Attended 1871 to 1882.
Nottingham.

MARSHALL, WM., 718, 719, 949.
Attended 1869 to 1874, and 1862 to 1869.
South Kensington and Sheffield.

MARTIN, WM., 840.
Attended 1868 to 1883.
Edinburgh.

MASON, HERBERT, 603.
Attended 4 years.
Birmingham.

MASSEY, H. G., 2, 4.
Attended?
South Kensington.

MAYEE, MARY A., 1117.
Attended?
Dublin.

MAYSTON, J. H., 615.
Attended 1879 to 1882.
Yarmouth.

McARTHUR, BLANCHE, 1456.
Attended 1866 to 1877.
Bloomsbury.

McCORMICK, ARTHUR D., 864, 1327.
Attended 1877 to 1882 and 1882 to 1884.
Belfast and South Kensington.

McCULLOCH, JOHN, 620.
Attended 1877 to 1883.
Belfast.

McDONALD, J., (*See* "Old London," Sec. xxii.)
Attended?
West London.

McFADDEN, FRANK, 1398.
Attended 1869 to 1873, 1873 to 1875.
Southampton and South Kensington.

McGOWAN, WM., 747, 1031.
Attended 1876 to 1884.
Belfast.

McINROY, JOHN, 57.
Attended 1870 to 1875, 1878 to 1882.
Dundee.

McKENZIE, GEORGE, 754.
Attended 1872 to 1880.
Sheffield.

MEADE, ELIZA, 964.
Attended?
Ursuline Convent, Cork.

MELDRUM, THOMAS, 965.
Attended 1871 to 1881.
Nottingham.

MENZIES, JAMES, 723.
Attended 1870 to 1877.
Edinburgh.

MICKLEWRIGHT, J. FRED., 287.
Attended 1881 to 1884.
Hanley.

MIDGLEY, JOSEPH, 1125.
Attended 1882 to 1883.
Halifax and Bradford.

MILLER, ISABELLA, 126.
Attended 1875 to 1879.
Lambeth.

MILLSON, J. JOHN, 938.
Attended 1872 to 1873.
Manchester.

MILNE, E. P., 859, 860, 865, 867, 869, 892.
Attended 8 years.
Lancaster.

MILWAIN, W. J., 770.
Attended 3 years.
Glasgow.

MILWARD, E. J., 804, 1211.
Attended 1876 to 1878, 1880 to 1883.
Kendal.

MINNS, JAMES, 823.
Attended 8 years.
Norwich.

MITCHELL, EMILY, 331.
Attended 1878 to 1884.
West London.

MONTALBA, HENRIETTA, 794.
Attended 1868 to 1875.
South Kensington.

MONTALBA, HILDA, 795.
Attended 1868 to 1875.
South Kensington.

MONTFORD, HORACE L., 834.
Attended?
Royal Albert Hall, School of Art Wood Carving.

MOODY, ELLWARD, 819.
Attended 1859 to 1865.
Huddersfield.

MOORCROFT, THOMAS, 216, 225, 227, 262, 267, 269, 275, 277, 288.
Attended 1869 to 1876.
Burslem.

MOORE, AMY GEORGINA, 157.
Attended 1881 to 1884.
Lambeth.

MOORE, E. MARY, 841.
Attended 1879 to 1884.
Southampton.

MOORE, GEORGE, 1344.
Attended?
Manchester.

MOORE, MARIAN, 1027.
Attended 1881 to 1884.
Dublin Metropolitan.

MOORE, MARY, 345, 346, 357.
Attended 1872 to 1881.
Preston.

MOORE, MISS, 1456.
Attended?
Bloomsbury.

MORGAN, ALFRED, 1286, 1292.
Attended 1849 to 1856.
South Kensington.

MORGAN, GEORGE, 932.
Attended 1866 to 1869.
Birmingham and South Kensington.

MORGAN, GEORGE T., 781.
Attended 1860 to 1867, and 1867 to 1870.
Birmingham and South Kensington.

MORGAN, WM. J,, 534.
Attended 1869 to 1870.
South Kensington.

MORRIS, R. J , 433, 944.
Attended 1865 to 1869.
Burslem and South Kensington.

MORRISON, P., 1152, 1160.
Attended 1862 to 1866, 1866 to 1870, 1881 to 1884.
Kidderminster and South Kensington.

MORRISON, W. W., 61.
Attended 1864 to 1865.
South Kensington.

MORROW, A. G., 45.
Attended?
South Kensington.

MORTON, GAVIN, 954.
Attended 1880 to 1884.
Kilmarnock.

MORTON, GEORGE, 16, 38, 39.
Attended?
South Kensington.

MORTON, W. SCOTT, 857, 578, 1206, 1247, 1280.
Attended 1856 to 1859 and 1862.
Glasgow and South Kensington.

MOSES, JOHN, 577.
Attended 1845 to 1848 and 1856 to 1859.
Somerset House and Coalbrookdale.

MOUNTFORD, FREDERICK, 1212, 1246.
Attended 1865 to 1882.
Kidderminster.

MUCKLEY, ANGELO F., 1136, 1338.
Attended 1875 to 1882.
Manchester.

MUCKLEY, W. J., 1136, 1269, 1338, 1344.
Attended 1848 to 1853.
Stourbridge, Birmingham, Somerset House, Marlborough House, and Manchester.

MUCKLEY, WILLIAM R., 1136, 1338.
Attended 1875 to 1882.
Manchester.

MULLIGAN, W. A., 9, 58.
Attended?
South Kensington.

MÜNTZER, FREDERICK, 862, 868, 870, 871.
Attended 1866 to 1868.
South Kensington.

MURRAY, CHARLES O., 1369, 1385, 1395, 1396, 1397.
Attended 1863 to 1869.
Edinburgh.

MURRAY, WILLIAM H., 1225.
Attended 1856 to 1869.
Dublin Metropolitan.

NAYLOR, ALBERT, 255.
Attended 1874 to 1882.
Stoke-on-Trent and Fenton.

NEEDHAM, ROBERT, 740.
Attended 1872 to 1882.
Sheffield.

NEWMAN, W. J., 616.
Attended 1871 to 1881.
South Kensington.

NEWNHAM, JOSEPHINE, 117.
Attended 1875 to 1877.
Lambeth.

NICHOLSON, J. O., 1076, 1120.
Attended 1856 to 1865.
Macclesfield.

NISBET, ETHEL CHAPMAN, 32, 793.
Attended 1879 to 1884.
Bloomsbury.

NOBLE, HENRY, 1262, 1277, 1311.
Attended 1873 to 1878.
West London.

NOBLE, JOHN S., 1394, 1395.
Attended 1870 to 1875,
West London.

NORRIS, FREDERICK C., 901.
Attended 1871 to 1873.
Bath.

NORTHWOOD, CHARLES, 513.
Attended 1880 to 1884.
Stourbridge.

NORTHWOOD, JOHN, 505, 507, 515.
Attended 1854 to 1864.
Stourbridge.

NORTHWOOD, WILLIAM, 510 to 512.
Attended 1871 to 1880.
Stourbridge.

NORTON, GEORGE, 713, 799.
Attended 1857 to 1860.
Sheffield.

NOWELL, A., 1216.
Attended 1878 to 1884.
Salisbury.

NUNN, WALTER, 84.
Attended 1859 to 1862, 1868 to 1869, 1869 to 1871, 1884.
Spitalfields, Charterhouse, South Kensington, Lambeth.

OAKES, JANE, 215.
Attended 1884.
Burslem.

OGLEBY, J. T., 844.
Attended 1869 to 1872.
Sunderland.

ORCHARD, JOHN, 508, 509.
Attended 1868 to 1875 and 1883 to 1884.
Stourbridge.

OSCROFT, SAMUEL W., 952, 953.
Attended 1847 to 1870.
Nottingham.

OXER, JOHN JAMES, 797A.
Attended 1860 to 1867.
Lambeth.

PAGE, H. MAURICE, 1335.
Attended 4 years.
Croydon.

PAGE, JOHN W. E., 1248, 1255.
Attended 1879 to 1881 and 1881 to 1884.
Lambeth and South Kensington.

PAGE, WM., 831, 838.
Attended 1882 to 1884.
South Kensington.

PALIN, WM. M., 1249.
Attended 1882 to 1884.
South Kensington.

PALMER, ALFRED, 5.
Attended 1876 to 1884.
York.

PARK, ALEXANDER, 1223, 1238.
Attended 1881 to 1884.
Glasgow.

PARK, JOHN H., 1153, 1163, 1229, 1243.
Attended 1870 to 1874.
Coventry.

PARKER, WILLIAM, 135.
Attended 1878 to 1882.
Lambeth.

PARKIN, GEORGE V., 598.
Attended 1858 to 1864.
Dudley.

PARNELL, ANNA, 43.
Attended 1866 to 1872.
Dublin.

PARR, JOSEPH, 310, 311, 312, 313, 314, 315, 317.
Attended 1869 to 1884.
Burslem.

PARRY, EDWARD, 256.
Attended 1881 to 1884.
Stoke-on-Trent and Fenton.

PATEY, WILLIAM, 179.
Attended 1870 to 1876.
Ryde.

PEACE, A. A., 750.
Attended 1875 to 1884.
Sheffield.

PEARCE, ARTHUR E., 8, 18.
Attended 1874 to 1884.
Lambeth.

PEARCE, HENRY, 708.
Attended 3 years.
Hull.

PEARCE, HENRY, 779.
Attended ?
Sheffield.

PEARSE, ALFRED, 1370, 1371, 1374, 1375, 1376.
Attended 1874 to 1876.
West London.

PENSON, F., 58.
Attended 1877 to 1883, 1883 to 1884.
Stoke-on-Trent and South Kensington.

PERKINS, P. S., 610.
Attended?
Leicester.

PHILPOT, MISS, 438.
Attended?
Lambeth.

PILSBURY, W. H., 254, 432.
Attended 1882 to 1884.
Stoke-on-Trent and Fenton.

PLATT, WALTER, 907.
Attended 1860 to 1864.
Yarmouth.

PLATTS, JAMES, 230.
Attended?
Derby.

PONTIS, J. (*See* "Old London.")
Attended?
South Kensington.

POOLE, FREDERICK, 222, 223, 226, 261, 265, 266, 273, 274.
Attended 1878 to 1884.
Burslem.

POOLE, J. O., 58, 328.
Attended 1882 to 1884.
South Kensington.

PORTER, FRANK, 1209, 1232, 1236, 1237.
Attended 1877 to 1884.
Stourbridge.

POYNTER, EDWARD JOHN, R.A., 1282 to 1285.
Attended 1849 or 1850.
Somerset House.

POYNTON, HENRY, 579 to 581, 619.
Attended 1858 to 1864 and 1877.
Coventry.

PRICE, R., 721.
Attended 1872 to 1873.
Charterhouse.

PINCHES, RICHARD, 802, 803.
Attended 1872 to 1879 and 1882 to 1884.
Lambeth and Chester.

PURCELL, ROBERT, 525.
Attended 1882 to 1883.
Manchester.

RAMSEY, ALLAN, 1311, 1312.
Attended 3½ years.
West London.

RANDALL, GEORGE, 1212.
Attended 1877 to 1884.
Kidderminster.

RANDALL, J., 1417 to 1429.
Attended 1857 to 1866.
South Kensington.

RANDALL, WILLIAM F., 743, 858, 872, 873, 878, 882 to 885, 887, 893, 902 to 904.
Attended 1863 to 1867 and 1867 to 1869.
Stroud and South Kensington.

READ, GEORGE, 874.
Attended 1864 to 1867.
Leeds.

REASON, FLORENCE, 10, 13, 51, 1362.
Attended 1872 to 1881.
Bloomsbury.

REEKS, MISS M. E., 826, 827, 838.
Attended 1871, 1877 to 1880, 1881 to 1884.
Royal Albert Hall School of Wood Carving and South Kensington.

RHEAD, GEORGE W., 23, 259.
Attended 1847 to 1851, 1856 to 1863, 1869 to 1871, 1878 to 1881.

RHIND, JOHN, 1252.
Attended 1865 to 1874.
Edinburgh.

RHIND, WILLIAM B., 917, 918, 922, 928, 1453.
Attended 1865 to 1874.
Edinburgh.

RHODES, JEHOIADA A., 188, 699.
Attended 1846 to 1848, 1854 to 1857, 1878.
Sheffield.

RHODES, R., 58, 929.
Attended 1878 to 1882, 1882 to 1884.
Newcastle-under-Lyme and South Kensington.

RICHARDSON, W. H., 501, 502.
Attended 1862 to 1863.
Stourbridge.

RICKATSON, R. O., 1268, 1305, 1311.
Attended 1872 to 1875.
West London.

RIDER, H., 58.
Attended?
South Kensington.

RILEY, J. W., 1183 to 1185, 1204.
Attended 1869 to 1883.
Halifax.

RILEY, T., 1359.
Attended?
South Kensington.

RISELEY, HERBERT, 1107.
Attended 1879 to 1884.
Macclesfield.

ROBERTS, CHAS., 1367.
Attended 1863 to 1868.
Lambeth and South Kensington.

ROBERTS, E. (? EMMA), 435.
Attended?
Lambeth.

ROBERTS, EMMA, 71.
Attended 1877 to 1879, 1880 to 1884.
Lambeth and City and Guilds Institute.

ROBERTS, FLORENCE C., 101.
Attended 1875 to 1879, 1882 to 1884.
Lambeth.

ROBERTS, W., 299.
Attended?
Stoke-on-Trent.

ROBERTSON, J. H., 54.
Attended 1876 to 1881.
Dundee

ROBERTSON, ROBERT G., 879.
Attended 1868 to 1870.
Kilmarnock.

ROBINSON, HERBERT, 1145, 1156, 1161, 1164, 1176.
Attended 1865 to 1870.
Halifax.

ROBINSON, J. T., 1108.
Attended 1880 to 1884.
Macclesfield.

ROGERS, EDITH, 111, 891.
Attended 1879 to 1884.
Lambeth.

ROGERS, E. (EDITH), 333 (See 111).
Attended?
Lambeth.

ROGERS, ISABEL M., 113.
Attended 1881 to 1884.
Lambeth.

ROGERS, KATE, 141.
Attended 1878 to 1881.
Lambeth.

ROGERS, MARK, 916, 920, 934.
Attended 1878 to 1881.
Lambeth.

ROGERS, MARTHA M., 89, 338, 342, 347.
Attended 1879 to 1884.
Lambeth and Westminster

ROSSITER, HENRY, 535.
Attended 1869 to 1870.
Frome and South Kensington.

ROUSE, CHARLES, 230.
Attended?
School?

ROUSE, JAMES, Sen., 230.
Attended?
School?

ROWE, MISS ELEANOR, 826.
Attended 1870 to 1871, and 1883 to 1884.
West London and South Kensington (Secretary, Royal Albert Hall School of Wood Carving).

ROWLEY, JAMES, 908, 1138, 1175, 1199.
Attended 6 years.
West London.

RUDDOCK, SAMUEL, 942, 947.
Attended 1851 to 1856.
Somerset House and Marlborough House.

RUMBLE, E. L., 91.
Attended 1880 to 1882.
Lambeth.

RUMBOL, ELLEN, 114.
Attended 1880 to 1883.
Lambeth.

RUSSELL, LOUISA, 148.
Attended 1882 to 1884.
Lambeth.

RUXTON MISS ANNA F., 1101.
Attended 1864 to 1874.
Dublin.

SAVAGE, WM., 523.
Attended 1876 to 1880.
Manchester.

SAVILL, EDITH, 15.
Attended?
Lambeth.

SCHEIBNER, FRANCIS, 183.
Attended 1873 to 1878.
Stourbridge.

SCHEIBNER, FRANK, 506, 507.
Attended 1873 to 1878.
Stourbridge.

SCHOOL OF ART WOOD CARVING, ROYAL ALBERT HALL, SOUTH KENSINGTON, THE STUDENTS OF THE, 824, 833, 837.

SCOTT, WALTER, 780, 787.
Attended 1864 to 1873.
Coventry.

SEADON, ROBERT, 295, 301.
Attended 1856.
Hanley.

SEDDING, J. W., 566.
Attended?
School?

SELOUS, EMILY, 582 (*See* Fennesy, Mrs.).
Bloomsbury.

SEWARD, EDWIN, R.C.A., 724, 1437, 1439, 1455.
Attended 1870 to 1876.
Cardiff.

SEWELL, ARTHUR J., 981.
Attended 1872 to 1888.
Nottingham.

SHELDON, FREDERICK, 1090 to 1094.
Attended 1870 to 1883.
Macclesfield.

SHELDON, GEORGE, 1037.
Attended 1869 to 1873.
Nottingham.

SHELDON, JOHN, 1077 to 1081.
Attended 1865 to 1872.
Macclesfield.

SHELTON, MISS CHARLOTTE, 1114.
Attended 1880 to 1883.
Cheltenham.

SHEPHERD, GEORGE W., 576, 940.
Attended 1871 to 1879, 1880, 1881 to 1882.
Coalbrookdale and South Kensington.

SHERLOCK, J. A., 751.
Attended 1869 to 1872, and 1872 to 1874.
Warrington and South Kensington.

SHETTLEWORTH, LIZZIE, 146.
Attended 1880 to 1881.
Lambeth.

SHORTER, ARTHUR P., 181.
Attended 1882 to 1884.
Middlesborough.

SILVER, ARTHUR, 1266, 1275, 1311.
Attended 1868 to 1872.
Reading.

SIMINDUCE, or SIMMANCE, ELIZA, 67.
Attended 1874 to 1884.
Lambeth.

SIMKIN, J., 1459.
Attended?
Lambeth and West London.

SIMPSON, WILLIAM, 377.
Attended 1864 to 1867.
South Kensington.

SINGER, EDGAR R., & HERBERT W., 551, 561, 564, 565, 602, 628.
Attended 1871 to 1877.
Frome and South Kensington

SKIDMORE, MISS HARRIETT, 1431 to 1433.
Attended?
Stourbridge and South Kensington.

SLATER, A., 379.
Attended 1858 to 1862.
Stoke-on-Trent.

SLATER, EMILY, 42.
Attended 1871 to 1884.
Gloucester.

SLOCOMBE, CHARLES P., 732, 733, 1384, 1387, 1389, 1390.
Attended 1847 and onwards.
Spitalfields and Somerset House.

SLOCOMBE, FREDERICK A., 63, 1386, 1388, 1391, 1392.
Attended 1861 to 1867.
South Kensington.

SMALL, ELIZABETH M., 152.
Attended 1876 to 1884.
Lambeth.

SMALL, MISS E., 58.
Attended 1874 to 1882.
Lambeth and South Kensington.

SMALLFIELD, KATHERINE B., 77.
Attended 1879 to 1880, 1883, 1884.
Kingsland and South Kensington.

SMART, THOS. C., 587 to 591.
Attended 1879 to 1884.
Dudley.

SMITH, CARRIE L., 244.
Attended 1874 to 1876, 1878 to 1880, 1882 to 1884.
Selby.

SMITH, ELLEN B., 156.
Attended 1881 to 1884.
Lambeth.

SMITH, F. GEORGE, 528, 1291.
Attended 1861 to 1863.
Lambeth and West London.

SMITH, FRANCIS, 472 to 476.
Attended 1876 to 1879.
Stourbridge.

SMITH, GERTRUDE, 138.
Attended 1859 to 1880.
Lambeth.

SMITH, H. J., 1452.
Attended ?
Nottingham.

SMITH, J. B., 1154, 1157.
Attended 1865 to 1869.
Halifax.

SMITH, J. MOYR, 428, 429, 430, 431, 542, 1379 to 1381, 1400, 1402.
Attended 1857 to 1860, 1869 to 1870.
Glasgow and South Kensington.

SMITH, MISS, 830, 836.
Attended ?
Royal Albert Hall School of Wood Carving, and Leeds.

SMITH, ROBERT, 842.
Attended ?
Inverness.

SMITH, THÓS., 365, 744, 889, 1294.
Attended 1876 to 1884.
Coalbrookdale.

SOUTHALL, M., 1459.
Attended ?
Bishopsgate.

SPALL, THOS., 692 to 695, 734.
Attended 1869 to 1873.
Birmingham.

SPARKES, MRS. C. A., 371.
Attended 1859 to 1861, 1861 to 1866.
South Kensington and Lambeth.

SPOONER, WILLIAM J., 976, 982, 1008.
Attended 1878 to 1884.
Nottingham.

STAFFORD, GEORGE, 997.
Attended 1878 to 1883.
Nottingham.

STAPLETON, HARRY, 764A.
Attended 1871 to 1874.
St. Martin's, W.C.

STAYNES, F. J., 1034.
Attended 1879 to 1883.
Nottingham.

STORWER or STORMER, EMILY E., 150.
Attended 1875 to 1879.
Lambeth.

STORY, BLANCHE, 989.
Attended 1866 to 1884.
Nottingham.

STRATTON, AMY, 1242.
Attended 1869 to 1873.
Salisbury.

STUART, LOUISA, 81.
Attended 1883 to 1884.
Lambeth.

STURGEON, KATE, 107.
Attended?
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SUDDARS, FRANK, 59, 60.
Attended?
Bradford.

SUTHERS, WM., 1458.
Attended?
South Kensington.

SWAYNE, CHARLES, 504, 505.
Attended 1883 to 1884.
Stourbridge.

SYKES, GODFREY (the late), 943, 1355.
Attended 1843 to 1854.
Master of School, 1854 to 1863.
Sheffield.

SYMES, P. H., 909.
Attended 1878 to 1884.
Dublin.

TABOR, G. H., 58.
Attended?
Lambeth.

TANNAHILL, WM., 1197, 1198.
Attended 1871 to 1878.
Kilmarnock.

TARVER, JANE, 1311.
Attended 1877 to 1879.
Northampton.

TATHAM, A. J., 848, 1272, 1311.
Attended 1878 to 1884.
West London.

TATLER, ALBERT, 208.
Attended 1882.
Burslem.

TAYLERSON, JOHN E., 933.
Attended 1880 to 1884.
Lambeth.

THATCHER, EUPHANIA, 151.
Attended 1878 to 1881.
Lambeth.

THATCHER, W. H., 1212.
Attended 1877 to 1884.
Kidderminster.

THICKETT, ERNEST, 720.
Attended 1874 to 1884.
Sheffield.

THOMAS, JAMES, 406, 756.
Attended 1880 to 1884.
Westminster Architectural Museum.

THOMAS, JOHN, 1178, 1182, 1186, 1192, 1195, 1196, 1241.
Attended 1873 to 1883.
Halifax.

THOMAS, T, 1103.
Attended?
Dublin.

THOMPSON, EMILY G., 540.
Attended 1866 to 1870.
Manchester.

THOMPSON, E. L., 711.
Attended 1875 to 1877.
Sheffield.

THOMPSON, MINNIE G., 128.
Attended 1882 to 1884.
Lambeth.

THOMPSON, MISS SYDNEY, 607.
Attended 1871 to 1873.
Belfast.

THOMPSON, SAMUEL, 592.
Attended 1876, and 1882 to 1884.
Sheffield.

THORPE, STUART, 611, 741, 742.
Attended 1871 to 1874.
Sheffield.

TIDMARSH, HENRY, 745.
Attended 1878 to 1884.
West London.

TINWORTH, GEORGE, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171.
Attended?
Lambeth.

TITE, G., 805 to 807, 850.
Attended 1870 to 1872.
South Kensington.

TOMLINS, H. J., 58, 624, 633, 1316.
Attended 1872 to 1882, and 1882 to 1884.
Worcester and South Kensington.

TONKS, J. WILLIAM, 790 to 792, 760 to 768, 771.
Attended 1854 to 1863.
Birmingham.

TRAVELL, THOMAS F., 975.
Attended 1875, 1879 to 1880, 1882 to 1884.
Nottingham.

TREGO, JOHN, J., 20, 606, 788.
Attended 1866 to 1870, and 1875 to 1884.
Coventry.

TROWER, MISS CHARLOTTE G., 1020. 1030.
Attended 1882 to 1884.
East Herts.

TUCKER, G. E., 627, 749, 899, 900.
Attended 1874 to 1884.
West London.

TURNER, E. PAGE, 898, 1264, 1281, 1295, 1322.
Attended 1854 to 1863.
Sheffield.

TURNER, WM., 1252.
Attended 1880 to 1883.
Edinburgh.

TURTON, GEORGE F., 980.
Attended 1872.
Nottingham.

TWIGGE, MISS ANNE, 1011, 1035.
Attended 1871 to 1884.
Exeter.

TYZACK, HENRY, 924.
Attended 1870 to 1880.
Sheffield.

VARLEY, EMILY LUCY, 53, 1350.
Attended 1880 to 1884.
Bloomsbury.

WAHAB, MISS H. E., 828, 832.
Attended 1883 to 1884.
Royal Albert Hall School of Wood Carving, and South Kensington.

WAIN, LOUIS, 1361.
Attended 4 years.
West London.

WAKELY, LOUISA, 78.
Attended 1881 to 1884.
Lambeth.

WALKER, ROBERT, 877.
Attended 1875 to 1883.
Edinburgh.

WALTON, C. H., 829.
Attended?
Reading, and Royal Albert Hall School of Wood Carving.

WALTON, WILLIAM R., 967.
Attended 1872 to 1882.
Nottingham.

WALLIS, GEORGE, 544.
Attended 1841, 1842 Student Exhibition, Somerset House.
1843 Head Master, Spital fields.
1844, 1845, 1846, Head Master, Manchester.
1851 to 1858, Head Master Birmingham.
1863 to 1884, Keeper of the Art Collections, South Kensington Museum.

WALLIS, MISS ROSA, 29, 543, 544, 698, 1399, 1434 to 1436.
Attended 1873 to 1874 and 1876 to 1878.
South Kensington.

WARD, GEORGE, 58.
Attended 1874 to 1881.
Devizes and South Kensington.

WARD, JAMES, 58, 1049, 1288, 1297
Attended 2 years.
Belfast and South Kensington.

WATERS, LIZZIE, 110.
Attended 1880 to 1882.
Lambeth.

WATERHOUSE, JOSEPH, 1133.
Attended 1850 to 1855.
Manchester.

WATKINS, JOHN, 734, 735, 1356, 1357, 1393.
Attended 1871 to 1872 and 1873 to 1875.
Birmingham and South Kensington.

WATSON, W. P., 24, 31, 34, 1446, 1447, 1448, 1450.
Attended?
South Kensington.

WATSON, W. S., 895.
Attended?
South Kensington.

WEATHERSTONE, ALFRED C., 880.
Attended 1879 to 1884.
West London.

WEBB, W. H., 19.
Attended 4 years.
West London.

WEBSTER, AGNES, 17.
Attended?
South Kensington.

WEBSTER, W. H., 1181.
Attended 1870 to 1874.
Halifax.

WEST, MISS ALICE L., 797, 1343.
Attended 1863 to 1873.
Bloomsbury.

WEST, MAUD ASHLEY, 1339.
Attended 1874 to 1880.
Bloomsbury.

WHEATON, LOUISE, 1019.
Attended 1875 to 1884.
Exeter.

WHITE, W. F., 58.
Attended 1875 to 1879, 1879 to 1884.
Leeds and South Kensington.

WHITEHEAD, A., 930.
Attended?
South Kensington.

WHITESIDE, H. J., 26.
Attended 1881 to 1884.
Birkenhead.

WILD, J. H., 1082 to 1086.
Attended 1868 to 1872.
Macclesfield.

WILLIAMS, HENRY, 233, 242.
Attended 1882 to 1884.
Coalbrookdale.

WILLIAMSON, J. J., 1403 to 1416.
Attended 1869 to 1871 and 1873.
South Kensington.

WILSON, GEORGE W., 941.
Attended 1883 to 1884.
Westminster.

WILSON, C. E., 613, 626.
Attended 1865 to 1880.
Sheffield.

WILSON, THOS., 522.
Attended 1865 to 1875.
Edinburgh.

WILSON, T. WALTER, 757, 758, 782, 783, 1430.
Attended 1868 to 1873.
South Kensington.

WINBURY, WILLIAM, 1159, 1162.
Attended 1870 to 1880.
Kidderminster.

WINDASS, MRS. M. A. S., 243.
Attended 1881 to 1884.
York.

WINTERBOTTOM, AUSTIN, 736, 905.
Attended 1873 to 1884.
Sheffield.

WISE, W. H., 1353.
Attended?
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WITTS or WILLS, ROBERT, 56.
Attended?
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WOOD, F., 211.
Attended?
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WOOD, JOHN W., 1012.
Attended 1872 to 1880.
Nottingham.

WOODALL, GEORGE, 477 to 484.
Attended 1867 to 1868.
Stourbridge.

WOODALL, THOMAS, 441 to 458, 472 to 476, 485 to 489, 490 to 499, 502.
Attended 1863 to 1881.
Stourbridge.

WOODALL, WILLIAM H., 369.
Attended 4½ years.
West London.

WOODHOUSE, F. W., 1449.
Attended?
South Kensington.

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WOOLLATT, GEORGE, 978.
Attended 1867 to 1878.
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WOOTON, JAMES, 300, 304.
Attended 1870 to 1872.
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WORTH, LUCY, 176, 177, 178.
Attended 1862 to 1872.
Nottingham.

WRIGHT, ALBERT, 292, 378.
Attended 1872 to 1882.
Hanley.

WRIGHT, CHARLES, 232.
Attended?
Derby.

WRIGHT, WILLIAM, 217, 218, 219, 272, 282, 285.
Attended 1863 to 1872.
Hanley or Burslem.

WYBURD, LEONARD, 1254.
Attended 2 years.
West London.

YATES, PARDOE, 1240.
Attended 1871 to 1873.
Salisbury.

YOUATT, BESSIE J., 94.
Attended 1878 to 1884.
Lambeth.

YOUNG, LILIAN, 1329, 1347.
Attended 1876 to 1884.
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YOUNG MEN'S CHRISTIAN INSTITUTE, LONG ACRE.
Ornamental Metal Work, 1

CIRCULAR SENT TO CONTRIBUTORS WHOSE WORKS, OR SOME PORTION OF THEM, HAD TO BE RETURNED FOR WANT OF SUITABLE SPACE FOR THEIR EXHIBITION.

SCIENCE AND ART DEPARTMENT OF THE COMMITTEE OF COUNCIL ON EDUCATION,

SOUTH KENSINGTON.

EXHIBITION TO ILLUSTRATE THE OPERATIONS AND THE INFLUENCE OF SCHOOLS OF ART, 1884.

The response to the invitation to submit works for Exhibition from and through the various Schools of Art has been so general, and the works received have been so numerous, that the limited space placed at the disposal of this Department by the Executive Council of the Health Exhibition has unfortunately prevented the full representation of the objects sent up.

Whilst thanking all concerned for the hearty response to the request made, I am directed to inform you that the works and designs for which space has not been found will be forthwith returned free of cost.

I am,

Your obedient Servant,

J. F. D. DONNELLY,

Colonel R.E., Secretary.

INTERNATIONAL HEALTH EXHIBITION, 1884.

SCIENCE & ART DEPARTMENT OF THE COMMITTEE OF COUNCIL ON EDUCATION, SOUTH KENSINGTON.

EXHIBITION TO ILLUSTRATE THE OPERATIONS AND THE INFLUENCE OF SCHOOLS OF ART.

SCHOOL STUDIES—DRAWINGS, DESIGNS, AND MODELS.

WORKS OF ORNAMENTAL AND DECORATIVE ART PRODUCED FROM DESIGNS BY STUDENTS IN SCHOOLS OF ART.

WORKS OF ORNAMENTAL AND DECORATIVE ART, WOODCUTS, LITHOGRAPHS, AND ETCHINGS DESIGNED OR EXECUTED BY THOSE WHO HAVE BEEN STUDENTS IN SCHOOLS OF ART.

CLASSIFICATION.

Sect. I. School Studies in Stages of Instruction. Designs and Models executed by the Students in the Schools. (*The latter are classed with the Section to which they belong.*)

II. Ceramic Manufactures, Porcelain, Earthenware, Stoneware, Terra-Cotta, &c.

III. Glass—Cut, Engraved, Flashed, &c. Stained and Painted Glass in windows or panels, and designs.

IV. Enamels on Metal. Cloisonné. Champlevé, &c.

V. Ornamental Metal-work.—Bronze, Brass, Iron cast or wrought. Drawings and Photographs of such works as may have been executed.

VI. Silver and Gold Plate, Plated Wares, Electro Deposits, including models for silver and gold work. Drawings and Photographs of such works as may have been executed.

VII. Jewellery and Personal Ornaments.—Gold, Silver, Plated, or in any other suitable materials. Medals and Seals. Fans.

VIII. Furniture and Wood Carving. Inlaid Wood. Parqueterie. Papier Mâché Ware, &c.

IX. Decorative Carvings in Stone or Marble, and Plastic Decorations.

X. Lace.—Point, Pillow, and Machine-made Lace. Drawings and Photographs of such as may have been executed.

XI. Woven Damasks in Linen and Cotton, plain or in colours.

XII. Silks, Ribbons, Trimmings, &c., including Furniture and Dress Fabrics. Embroidery on Silk.

XIII. Mixed Woven Fabrics for Dresses, Shawls, Scarfs, &c.

XIV. Printed Fabrics.

XV. Carpets and Tapestry.—Curtains, Table Covers, &c.

XVI. Painted Decorations, Wall Papers, &c.

XVII. Lithographs, Chromolithographs, &c.

XVIII. Illuminations. Illuminated Addresses. Title Pages of Books. Bookbindings, &c.

XIX. Etchings, Engravings on Wood, and Drawings for Engraving.

XX. Painted Photographs of objects of Decorative Art.

XXI. Architectural Drawings, Designs, and Models of Buildings.

XXII. Miscellaneous. Works not included in any of the above divisions, but yet coming within the object of this Exhibition.

INTERNATIONAL HEALTH EXHIBITION, 8th MAY, 1884.

Private Owners offering objects designed by Students of Schools of Art of the United Kingdom to the Science and Art Department Exhibition, to illustrate the operations and the influence of Schools of Art.

HER MOST GRACIOUS MAJESTY THE QUEEN.

Chalk Drawing by Miss Ida Lovering. Queen Square School, Bloomsbury, W.C. "A Girl's Head."
Purchased and lent by Her Majesty the Queen. (From Osborne.)

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

A Gold Key. Gothic Design. Presented to H.R.H. at Leicester, 1882.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. S. Blanckensee & Son, *Birmingham.*

HIS ROYAL HIGHNESS THE DUKE OF EDINBURGH, K.G., K.T.

Majolica Ware Dish. "De Morgan Lustre Ware."
Designed by James Gamble, *Sheffield School.*
Fired by Mr. De Morgan, *Chelsea.*

HER ROYAL HIGHNESS THE PRINCESS OF WALES.

A Gold Bouquet Holder. Presented at Swansea in 1881.
Designed by J. W. Tonks, *Birmingham. School.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
Gold Chatelaine. Presented at Swansea in 1881. Jewelled.
Designed by J. W. Tonks, *Birmingham.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*
Silver Spade, with ivory handle, enamelled and gilt. Presented at Leicester in 1882.
Designed by J. W. Tonks, *Birmingham School.*
Manufactured by Messrs. S. Blanckensee and Son, *Birmingham.*

HER ROYAL AND IMPERIAL HIGHNESS THE DUCHESS OF EDINBURGH.

Study of Flower in Oils. "Azaleas."
Painted by Miss Isabel Hancock, *Queen's Square School, Bloomsbury, W C.*
Water Colour Drawing. "Head of a Sailor;" from life.
Painted by Miss Florence Reason, *Queen's Square School, Bloomsbury, W.C.*

HER ROYAL HIGHNESS THE PRINCESS CHRISTIAN.

Lace Dress.
Designed and worked by Mrs. Margaretta Clarke, *Queen's Square School, Bloomsbury, W.C.*

HER ROYAL HIGHNESS THE DUCHESS OF ALBANY.

Silk Fan. Pearl Mount.
Designed and painted by Mrs. Ethel C. Nisbet, *Queen's Square School, Bloomsbury, W.C.*

ALISON, GENERAL SIR ARCHIBALD, BART., K.C.B.

Sword of Honour. Presented at Glasgow.
Designed by W. J. Milwain, *Glasgow School.*
Manufactured by Messrs. G. Edwards & Sons, *Glasgow.*

ART UNION OF LONDON.

Bronze Statuette "Cimabue."
Designed by Miss Emily Selous (Mrs. Fennesy), *Queen's Square School, Bloomsbury.*
Executed by C. Delpech.

ASTLEY, SIR JOHN, BART.

Racing Plate. Silver Groups.
Designed by G. A. Carter, *Lambeth School.*
Manufactured by Messrs. Hunt & Roskell, *Bond Street, W.*

BAILEY, A. N., ESQ.,

Study of Roses.
Drawn by Miss A. M. Bailey (Mrs. T. Clack), *South Kensington Schools.*

BRIGHT, THE RIGHT HON. JOHN, M.P.

Silver Key. Gothic style, enamelled. Presented at Birmingham on opening the Cobden Coffee House, 1883.
Designed by J. W. Tonks, *Birmingham School.*
Manufactured by Messrs. T. & J. Bragg, *Birmingham.*

BRIGHTWYN, Mrs., Stanmore.
Study, "Chrysanthemums." Water Colour.
Drawn by Miss Ethel C. Nisbet, *Queen's Square Schools, Bloomsbury, W.C.*

FLETCHER, B. E., ESQ., Marlingford Hall, Norwich.
2 Carved Panels; Lime-wood.
Designed and Carved by James Minns, *Norwich School.*

HAWKSLEY, THOMAS, ESQ., C.E., F.R.S.
Silver Testimonial. Table Centre-piece. Two Dessert Stands. Salver.
Designed by J. Swaffield Brown, *Finsbury School.*
Manufactured by Messrs. Hunt & Roskell, *Bond Street, W.*

LAMBERT, MRS. ROWLEY, Hampton Court Palace.
Painted Decoration. Designs for Tapestry Curtains.
Drawn by W. Perry, *Dublin Royal Society School.*

LOMAX, JOHN, ESQ., Manchester.
Carved Oak Hall Seat.
Designed by T. Finchett, *Manchester School.*
Manufactured by Messrs. Kendal, Milne, & Co., *Manchester.*

OFFICERS COMMANDING FIRST BATTALION 4th KING'S OWN, ROYAL LANCASHIRE REGIMENT.
Trophy. The "Magdala." Silver and silver parcel gilt.
Designed by C. P. Slocomb, *Spitalfields and Somerset House Schools.*
Manufactured by Messrs. Elkington & Co., *London and Birmingham.*

OWEN, SIR PHILIP CUNLIFFE, K.C.M.G., C.B.
Painted Porcelain Panel, "Music."
Designed and made by R. A. Ledward, *Burslem School.*
Copper Gilt Flagon, with Cover.
Designed and executed by E. W. Clayton, *Sheffield School.*
Boudoir Mantel-piece Set, Porcelain. Clock Case, Three Light Candlesticks, Two Flower Vases, Two Flower Pots.
Designed by R. Lunn, *Sheffield School.*
Manufactured by Messrs. McIntyre & Co., *Burslem*, and the Derby Crown Pottery Co., *Derby.*

OWEN, LADY CUNLIFFE.
Glass Bowl and Dish. Blue ground, "cut cameo" ornament.
Designed by T. Woodall, *Stourbridge.*
Manufactured by Messrs. T. Webb & Sons, *Stourbridge.*

PERKIN, Mrs, T. DIX, Harrow.
Gold Jewellery Set. Collarette, Bracelet and Earrings.
Designed by J. W. Tonks, *Birmingham School.*
Manufactured by Messrs. T. and J. Bragg, *Birmingham.*

POLSON, JOHN, ESQ., Paisley.
Silver Gilt Dessert Service.
Designed by Sir Noel Paton, R.S.A.
Modelled by Alexander Crichton, *Edinburgh School.*
Manufactured by Messrs. Mackay and Cunningham, Edinburgh.

PROPRIETORS OF THE "GRAPHIC" NEWSPAPER, London.
Portrait, "M. de Lesseps." Engraving.
Executed by Walter T. Wilson, *South Kensington Schools.*

SAMUDA, J. D'AGUILAR, ESQ., M.P.
Silver Testimonial. "King John signing Magna Charta."
Designed by G. A. Carter, *Lambeth School.*
Manufactured by Messrs. Hunt & Roskell, *Bond Street, W.*

SAMUEL, STUART, ESQ.
Cabinet, Wrought Iron.
Designed by H. Faulkes, *Birmingham School.*
Manufactured by A. Newman, *Maddox Street, W.*

SHEPHERD, R. H., ESQ.,
Time Study. "Daffodils."
Drawn by Miss Ethel Nisbet, *Queen's Square School, Bloomsbury, W.C.*

THE COUNCIL OF THE SOCIETY OF ANTIQUARIES OF LONDON.
Painted Photographs.
Executed by Miss Rosa Wallis, *South Kensington School.*

THE FINE ART SOCIETY, New Bond Street.
Etchings.
By Frederick A. Slocomb, *South Kensington Schools.*

THE MAYOR AND CORPORATION OF ROTHERHAM.
Gold Chain and Badge.
Designed by J W. Tonks, *Birmingham School.*
Manufactured by Messrs. T. and J. Bragg, *Birmingham.*

THE MAYOR AND CORPORATION OF STOKE-UPON-TRENT.
Gold Chain and Badge, 1875.
Designed by J. W. Tonks, *Birmingham School.*
Manufactured by Messrs. T. and J. Bragg, *Birmingham.*

THE MAYOR AND CORPORATION OF WEST BROMWICH.
Gold Chain and Badge. Withdrawn.
Silver Mace.
Designed by J. W. Tonks, *Birmingham School.*
Manufactured by Messrs. T. and J. Bragg, *Birmingham.*

WOLSELEY, GENERAL, THE RIGHT HON. LORD, G.C.B G.C.M.G.
Silver Inkstand. Presented 1882.
Designed by G. M. Kertland, *South Kensington Schools.*
Manufactured by Messrs. R. & S. Garrard, *Haymarket, W.*

WALLACE, SIR RICHARD, BART., M.P.
Carved Wood Cabinet; 16th century style.
Designed by W. Allwright, *West London School.*
Manufactured by Messrs. Holland & Sons, *Mount Street, W.*

Index to Names of Students of Schools of Art, and of Manufacturers offering objects to Science and Art Department Exhibition, to illustrate the Operations and the Influence of Schools of Art. 1884.

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ABRAHAM, F. X., South Kensington Schools, 1883–84. Stoke-on-Trent School, 1876–82. West London School, 1883.
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ADAMS, FRANK E., Macclesfield Embroidery School.
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ADAMS, FRANK E., Macclesfield School, 1878–84.
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ADAMS, ROBERT H., Allen Street British Schools (Blackfriars), 1875–84.
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ADAMSON, WILLIAM, Dundee School, 1878–80.
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ALEXANDER, J., Manchester School, 1870–77.
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GIBBONS, O. Sec. II.

ALLEN, F. J., Lambeth School, 1880–1884.
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ALLEN, JOHN J., Nottingham School, 1879–84.
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ALMOND, W. DOUGLAS, West London School, 1883.
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ALMQUIST, CARL, West London School, 1878–84.
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AMOORE, E. ANNE, Hastings & St. Leonards, 1879–84.
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ANDERSON, ELIZABETH F., Edinburgh School, 1873–80.
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ARDING, HELEN ALICE, Lambeth School, 1874–78.
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ARDING, MARY M., Lambeth School, 1880–83.
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ARMITAGE, G. F., Macclesfield Embroidery School.
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ARMITAGE, IBBETSON & CO., Bradford.
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ARNOTT, H. D., Great Yarmouth School, 1870–74. 1882–84.
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ARTHUR, FREDERICK, Motcomb Street, S.W.
See RAMSEY, ALLAN. Secs. I., XVI.

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See SELOUS, MRS. Sec. V.

ARTISTIC STATIONERY CO., Dyers Buildings, Holborn.
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(Lock & Co.) Carved Wood Panel. Sec. VIII.

ASTLEY, SIR JOHN, BART.
Racing Plate. Designed by G. A. Carter, Lambeth School. Sec. VI.
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ATKEY, CHARLES J., Nottingham School, 1873–80. 1884.
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ATKIN BROTHERS, Sheffield.
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AUMONIER, LOUISA, St. Martin's School, W.C., 1860–64.
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(Woollam's) Paperhangings. Sec. XVI.

AUSTIN, A., Derby School, 1879–84.
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AYERS, ELLEN M., Great Yarmouth School, 1871–79.
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AYLING, ROBERT S., Westminster, 1880–83.
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AYRE, MARY JANE, Queen Square School, Bloomsbury, 1882–84.
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BACUP, THE BOROUGH OF, CORPORATION.
See TONKS, J. W. Sec. VII.

BAILEY, ALICE M., South Kensington Schools.
See CLACK, Mrs. T.

BAILEY, GEORGE, Derby Central School, 1870–81.
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BAILEY, JOHN T., Newcastle-under-Lyme School, 1882–84.
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Keramics per Mintons, Voucher Reg. No. 3541, April 9, 1884.

BAILEY, A. N., ESQ.
Study of Roses. Drawn by Mrs. T. Clack, South Kensington Schools.
(Lent by A. N. Bailey, Esq.) Sec. I.

BAILY, ALICE, Dublin Metropolitan School, 1878–84.
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BAINBRIDGE, LOUISA, Cheltenham School, 1881–84.
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BAIN, LIZZIE, A., Kilmarnock School, 1878–84.
Copy of Oil Painting. Sec. I.

BAIRSTO, WILLIAM, Selby School, 1872–74. 1879–83.
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BAKER, ANNE, Cork, 1862–76.
Porcelain Tiles. Sec. II.
(Pym Brothers.) Poplins. Sec. XIII.

BAKER, THOMAS, Coventry School, 1864–69.
Studies. Sec. I.
(Rotherham & Sons.) Jewellery. Watchcases. Sec. VII.

BALFOUR, ANDREW, Glasgow School, 1880–84.
Design for a Church. Architecture. Sec. XXII.

BALL, EDITH H., Lambeth School, 1880–84.
(Doulton & Co.) Keramics. Bowl. Sec. II.

BALL, SUSAN, Dublin Metropolitan School, 1866–70.
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(Pym Brothers.) Damasks. Sec. XI.
(Bessborough Co.) Damasks. Secs. XI., XII.
Lace. Sec. X.

BALLANTINE & SONS, Edinburgh.
See Wilson, Thomas. Sec. III.

BALMENT, JAMES, Bristol School, 1880–84.
Studies. Anatomical Drawing. Sec. I.

BANGHAM, JOSEPH, Coalbrookdale, 1878–84.
(Maw & Co.) Keramics. Sec. II.

BANGOR, THE CITY OF, CORPORATION.
See Tonks, J. W. Sec. VII.

BANKS, JAMES, Stoke-on-Trent & Fenton School, 1881–84.
Two Flower-holders, 7*s.* 6*d.* each. Sec. II.
Two Dessert Plates Sec. II.
Keramics, per Mintons, Voucher Reg. No. 3541, April 9, 1884.

BANKS, WILLIAM H., Rotherham, 1872–84.
Designs. Silver Work. Metal Work. Secs. I., V., VI.
Wood Carving. Sec. VIII.

BARBOUR, ANDERSON, & CO., Glasgow.
See Brown, John. Sec. I..
Lawson, W. A. Sec. XII.
Adams, Edward F. Sec. XII.
Tannahill, W. Sec. XV.

BARCLAY, FANNY, Dublin Metropolitan School, 1879–84.
Designs. Damasks. Secs. I., XI., XII.

BARDEN, GEORGINA, Dublin Metropolitan School, 1878–84.
Designs. Botanical Analysis. Sec. I.

BARKER, ALICE M., Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

BARKER, CLARA S., Lambeth School, 1876–78.
(Doulton & Co.) Keramics. Bottle. Vase. Sec. II.

BARKER, GEORGE, Kidderminster School, 1870–73.
Technical Design. Carpets. Secs. I., XV.
(Assisted by William Tucker, Head Master.)

BARLOW, FLORENCE E., Lambeth School, 1873–81; & City & Guilds Institute.
(Doulton & Co.) Keramics. Flower-pot. Sec. II.

BARLOW, HANNAH B., Lambeth School, 1868–84, & City & Guilds Institute.
(Doulton & Co.) Keramics. Vase. Sec. II.

BARLOW, LUCY A., Lambeth School, 1877–79. 1882–84; & City & Guilds Institute.
(Doulton & Co.) Keramics. Flower-pot. Sec. II.
N.B.—Ornament by Lucy A. Barlow; Animals in Panels by Hannah B. Barlow.

BARNARD, BISHOP, & BARNARDS, Norfolk Works, Norwich.
See Binns, James. Sec. VIII.

BARNFIELD, R. C., Gloucester, 1869–1882.
Illuminations. Sec. XVIII.

BARNEY, EMILY, Dublin Metropolitan School, 1880–84.
Designs. Embroidery, &c. Secs. I., XII.

BARON, WILLIAM, Lambeth, 6 months, & South Kensington Schools, 7 months.
(Doulton & Co.) Keramics. A Pot. Sec. II.

BARRETT, THOMAS, Macclesfield School, 1879–84.
Design for Silk Hanging. Secs. I., XII.

BARTLETT, FLORENCE, Bristol School, 1878–84.
Studies. Drawings in Sepia from Cast. Sec. I.

BARTLEY, ALICE, Coalbrookdale School, 1866–84.
(Maw & Co.) Tiles. Sec. II.

BARWELL, SONS, & CO., Birmingham.
See Maddox, T. W. Sec. V.

BATCHELOR, MARY, Gosport School, 1875–80. 1882–84.
Design. Panels. Secs. I., II., IX.

BATCHELOR, M. H., Derby Central School, 1873–81.
Collective Exhibit. Sec. XVIII.
See Derby Central School.

BATE, EMILY, Plymouth School, 1877–80.
School Work. Oil Painting from Life. Sec. I.

BATES, HENRY.
Photograph. A Carved Stone Panel. Sec. IX

BATEMAN, W. E., Sheffield, 1878–82.
(Pawson & Brailsford.) Lithographs, &c. Sec. XVII

BATES, DAVID, & OTHERS, Worcester, 1856–64. 1872.
(Royal Porcelain Works.) Porcelain Jardiniere. Sec. II

BATH, EMILY BRADFIELD, King's Lynn School, 3 years.
Studies for Wall Papers. Sec. XVI.

BATH, WILLIAM BRADFIELD, King's Lynn School, 3 years.
Studies for Wall Papers. Sec. XVI.

BATH, WILLIAM & EMILY, King's Lynn School.
Wall Papers. Sec. XVI.
See BATH, EMILY B. Sec. XVI.
BATH, WILLIAM B. Sec. XVI.

BATHGATE, GEORGE, Edinburgh, 1875–79.
School Work. Antique. Sec. I.

BAUMGARTNER, MARY, Yarmouth School, 1879–84.
Studies. Muslins and Playing Cards.
Designs. Secs. I., IX., XIV., XVII.

BAUMGARTNER, P., Great Yarmouth, 1881–83.
Design. Muslins. Secs. I., XIV.

BAYLEY, A. W. C., South Kensington School.
Study of Flowers, Water Colour. Sec. I.

BAYNTON, HARRY, Coventry School, 1873–84.
Studies. Stages 3*b*, 5*a*, 5*b*, 8*b*1, 8*b*2, 10*a*, 15*a*, 22*c*, 23*b*, 23*c*, 23*a*. Sec. I.
Designs for Watch Cases. Sec. VII.

BEACALL, FRANK, Hanley School, 1881–84.
Two Dessert Plates. Sec. II.
Keramics per Mintons, Voucher Reg. No. 3541, April 9, 1884.

BEAL, Royal Albert Hall, School of Wood Carving, W.
Wood carving. Gothic Panel. (Withdrawn.) Sec. VIII.

BEATTIE, CHALLEN, Stoke-on-Trent, 1885. Birmingham School, 1859–60.
(Elkington & Co.) Bronze Work. Sec. V.
Silver Work. Sec. VI.
(Tonks, W., & Sons. Pickering, J. W.)
Metal Work. Sec. V.

BEATTIE, CHALLEN, Birmingham School, 1859–60.
(Elkington & Co.) Silver Cradle Centrepiece and Plate. Sec. VI.

BEATTIE, H. W. (44 Richmond Gardens, Shepherd's Bush), South Kensington Schools; and Boston, U.S.A., School of Art, 7 months.
Model Design. Wall Tiles. Secs. I., II.

BEAUPRÉ, CHARLES J., West London School, 6 years. South Kensington, 1882–83.
(Liley & Wood.) Studies. Designs. Furniture, &c. Secs. I., VIII., XVI., XVII.
(Furnival, T., & Sons.) Keramics. Ewer and Basin. Sec. II.
(Walton, F., & Co.) Decoration. Sec. XVI.

BECK, ACIDALIA, Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

BECKHAM, J. T., York School, 1874–84.
Studies. Sec. I.

BEDFORD, GEORGE, Torquay School.
(S. & A. Dept.) Photograph of Decoration.
Foliage in Plaster. Premiated 1874 by Plasterers' Company. Sec. IX.
(Watcombe Terra-Cotta Co.) Terra-Cottas, Architectural Details. Sec. II., XXI.

BEDFORD, GEORGE, Torquay School, 1866–77.
Decoration. Plaster. Sec. IX.
(Watcombe Terra-Cotta Co.) Terra-Cotta. Sec. II.

BEECH, DANIEL, Stourbridge, 1872–1875.
(Stevens & Williams.) Ornamental Glass. Sec. III.

BELL, EMILY M., Bristol School, 1876–81.
Study. Oil Painting. Fruit. Sec. I.

BENNETT, REUBEN, Manchester School, 1869–70.
(Woollams.) Decoration. Sec. XVI.

BENSON & SON, Ludgate Hill.
Gold and Jewelled Casket. Sec. VI.
H.I.M. the Emperor of Russia.

BENZIE, JAMES, Kilmarnock School, 1875–79.
School Work. Sec. I.

BERGIN, ISABELLA C., Dublin Metropolitan School, 1868–81.
Designs. Muslin and Damask. Silk. Secs. I., XIII.
Design for Inlaid Border. Secs. VIII., XIV.

BERKS, EDWARD, Stoke-upon-Trent School.
(Mintons.) Ornamental Tiles. Sec. II.

BESBOROUGH CO., Newry.
Damasks.
See BALL, SUSAN. Secs. I., XII.

BEST, GEORGE, Salisbury School, 1880–84.
Designs. Damask, Linen. Secs. I., XI.

BETTS, JESSIE, Weymouth School, 1877–78. 1881–84.
Designs. School Studies. Sec. I.

BILLOWS, EMMA C., West London School, 1876–79. 1880–82.
Study. Sec. I., II.

BILTON, LOUIS, Stoke-on-Trent & Fenton School, 1873–84.
Two Jars, 75*s.* each. (Bowls.) Sec. II.
Two Vases, 52*s.* 6*d.* each. Sec. II.
Two Tiles, 6 + 6, 12*s.* each. Sec. II.
Two Vases, 18 guineas each. Sec. II.
Two Vases, 15 guineas each. Sec. II.
Keramics per Mintons.

BINDON, GEORGE, Lambeth School.
Study of a Head from Life (Terra Cotta). Sec. II.

BINNS, ALBERT, Worcester School, 1879–82.
Designs. Tea Cups. Secs. I., II.

BIRAM, JANE, Sheffield School, 1858–1884.
Madonna and Child. Wood carving. Sec. VIII.

BIRCHENOUGH, JOHN, & SONS, Macclesfield.
Collective Exhibit.
See SHELDON, J. Sec. XII.
SHELDON, F. Sec. XII.
CARTWRIGHT, A. Sec. XII.
WILD, J. Sec. XII.
DORAN, THOMAS. Sec. XII.
KERR, THOMAS. Sec. XII.

BIRCH, BESSIE, Dublin Metropolitan School, 1872–75.
Designs. Tea Service. Secs. I., II.

BIRCUMSHAW, LOUIS, Nottingham School, 1877–84.
Lace Set. Designs. Secs. I., X., XVI.

BIRKS, EDWARD, Stoke-on-Trent & Fenton School, 1875–84.
One Tile, 6 + 6, 6*s.* each. Sec. II.
Keramics, per Mintons.

BISHOP, ROBERT H., Nottingham School, 1869.
Designs for Lace Curtains. Secs. I., X.

BLACK, J. J., Manchester School, 1844–51.
(Cowlishaw, Nicol, & Co.) Tapestry. 3 pieces.
Carpets. Secs. XII. & XV.

BLACK, WILLIAM S., Edinburgh School, 1870–79.
(Constable, T. A., & Co.) Ornamental Stationery. Sec. XVII.
Menu Cards. Sec. XVII.
Engravings. Sec. XIX.
(Waterston, G., & Sons.) Chromo-Lithographs. Sec. XVII.

BLAIR, J., Edinburgh, 1865–73.
(Grant, R., & Son.) Personal. Illuminations. Sec. XVIII.
School Work. Sec. I.

BLANCKENSEE & SON, Birmingham.
Jewellery. Gold Key. Silver Spade.
See TONKS, JOSEPH W. Secs. VI., VII.

BOARDMAN, W., Burslem School, 1884.
(Doulton & Co.) Keramics. Plate. Sec. II.

BODLEY, E. J. D., & CO., Hill & Crown Works, Burslem.
See MICKLEWRIGHT, FREDERICK. Sec. II.
WRIGHT, WILLIAM. Sec. II.
CAPEY, A. J. Sec. II.
CARTWRIGHT, H. Sec. II.
HARTLEY, S. Sec. II.
HOSBAND, H. Sec. II.
MOORCROFT, T. Sec. II.
POOLE, F. Sec. II.

BOGUE, DAVID, London.
Engravings for "Dramatic Notes."
See WILSON, WALTER T. Sec. XIX.

BOOLE, ALICIA, West London School, 1882–84.
Studies. Sec I.

BONCHETTE, MARTIN E., Spitalfields School, 1879–80. Islington, 1875–76. Finsbury Park, 1872–73.
Lamp. Design. Sec. IV.
Panel. Design. Sec. I.

BONE, HERBERT, Lambeth School, 1870–76.
Oil Painting. Study. Sec. I.
Decoration. Sec. XVI.

BONNER, ETHEL, M., Sleaford School, 1879–82.
School Studies. Sec. I.

BONTWOOD, CHARLES, Plymouth School, 1877–80.
School Work. Sec. I.

BOOTH, JAMES, Sheffield School, 1869–81.
Copper Panel. Sec. V.
(Meeson, J.) Silver Work. Sec. VI.
Silver Box. Sec. VI.

BOOTH, JOHN, Macclesfield School, 1877–84.
Design for Embroidered Silk Cover. Sec. XII.

BORLAND, MAGGIE, M. G., Kilmarnock School, 1875–84.
School Work. Landscape. Sec. I.

BOSS, WILLIAM G., Edinburgh School, 1867–72. 1876–80.
Design for Window. Secs. I., III.
Stained Glass. Sec. III.

BOTT, JOHN, & OTHERS, Worcester, 1872–77.
(Royal Porcelain Works.) Porcelain. Sec. II.

BOULTON, ARTHUR, Stoke-on-Trent & Fenton School, 1877–84.
Flower-holder, 15*s.* 6*d.* Sec. II.
Keramics, per Mintons, Voucher Reg. No. 3541, April 9, 1884.

BOWCHER, A. W., South Kensington Schools, 1878–83.
Model Design for a Drinking Fountain. Secs. I., II., XXI.
Designs. Plaster Freizes. Secs. I., IX.
Terra Cottas. Sec. II.

BOWCHER, ALFRED W., 72 Stroud Green Road, Finsbury Park, N.
Modelling in Terra Cotta. Sec. II.

BOWCHER, FRANK, South Kensington School, 1881–84.
Coffer, Wood Carved. Sec. VIII.

BOWEN, ELIZA F., Lambeth School, 1878–82. 1882–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

BOYD, AGNES, S., Edinburgh School, 1860–65.
School Work. Stage 23*c*. Sec. I.

BOYD, MARIANNE, Edinburgh School, 1859–62. 1864–66.
School Work. Stage 23*a*. Sec. I.

BOYLE, JAMES, Dublin Metropolitan School, 1867–78.
Designs. Silverplate. Mirror Frame.
„ Keramics. Plates.
Secs. I., II., V., VI., VII., VIII.
(Fry & Co.) Damasks. Sec. XI.

BRADBURN, JOHN W., Coalbrookdale School, 1872–83. South Kensington, 1883–84.
Design. Candelabrum. Sec. VI.
„ Mosaic. Secs. I., II., III.
(Maw & Co.) Keramics. Tiles. Sec. II.
Design. Silver Vase. Secs. I., VI.
Terra Cotta Column. Secs. I., II.
Brussels Carpet. Secs. I., XV.
Grill, wrought iron. Secs. I., V.
Vitreous Mosaic. Secs. I., III.
Ceiling. Sec. XVI.
Silver Candlestick. Sec. VI.

BRADFORD ART NEEDLEWORK SOCIETY, Bradford.
See HART, HARRY, Shipley School. Sec. XV.

BRADLEY, DORA, Dublin Metropolitan School, 1869–77.
Designs. Bronze Work, &c. Secs. I., V.

BRADLEY, JAMES, Worcester School, 1862–77.
Designs. Decoration. Secs. I., XVI.
„ Jardinière. Sec. II.

BRADLEY, JAMES, & OTHERS, Worcester.
(Royal Porcelain Works.) Porcelain Flower Pot. Sec. II.

BRADLEY, SARAH A., Bloomsbury, Queen's Square Schools, 1849–60.
Keramics. Sec. II.
Papier Mâché Tea Tray. Sec. VIII.
(Mintons.) Keramics. A Panel. Sec. II.
(Minton, Hollins.) Keramics. Panel of Painted Tiles. Sec. II.
Design for Window Glass. Sec. III.

BRADLEY, SARAH, 75 Pyenest Street, Stoke on Trent.
Papier Mâché Manufactures.
See BRADLEY, SARAH. Sec. VIII.

BRAGG, T. & J., Birmingham.
Jewellery. Bouquet Holder, Gold. Chatelaine, Gold. Corporation Collars and Badges, Gold. Suite Personal Jewellery. Silver Key. Collarette, Gold. Bracelet, &c.
See TONKS, JOSEPH W. Secs. VI., VII.

BRAMAH, THOMAS, 1875–76. 1881–83.
BLACK, W. S., 1870–79.
} Edinburgh School.
(Waterston, G. & Sons.) Engraved Seals. Sec. XXII.

BRANDRAM, ANDREW G., East Herts School, 1882–83.
Architectural Designs. Sec. XXI.

BRANNAM, C. H., The Potteries, Barnstaple.
See HALLORAN.
GAMESON.
JULIAN.
OXLAND.
STEELE.
WALLACE.
Plymouth School. Sec. II.

BRATT, J. W., Burslem School, 1881–1883.
(Doulton & Co.) Keramics. Vases and Plates. Sec. II.

BRAY, NICHOLAS, Sheffield School, 1855–66.
Silver Spoons and Forks. Sec. VI.

BREADON & SONS, Plymouth.
Lithographs.
See HAWKINS, JOHN. Sec. XVII.

BREDIN, MARY, Dublin Metropolitan School, 1863-72.
Designs. Carpets. Secs. I., XV.

BRETT, FRANCES, Dublin Metropolitan School, 1869–73.
Wall Papers. Sec. XVI.
Designs. Damasks. Porcelain. Secs. I., II., XI., XII.

BRETT, MARY, Dublin Metropolitan School.
(Wedgwood & Sons). Design. Plates. Keramics. Sec. II.

BRIDGWATER, H. S., Dudley, 1881–1884.
Studies. Wrought Ironwork. Secs. I., V.

BRIGGS, JOHN, Edinburgh School, 1874–84.
School Work. Stage 22*a*. Sec. I.
Wood Panelling. Sec. VIII.
Design for Tiles. Sec. II.

BRIGHT, RIGHT HON. JOHN, M.P.
Silver Key.
See TONKS, J. W. Sec. VII.

BRIGHTWYN, Mrs., The Grove, Stanmore.
See NISBET, ETHEL CHAPMAN. Sec. I.

BRINDLEY, CHARLES A., Kidderminster, 1873–74. South Kensington, 1874–77.
Carpets. Sec. XV.
Studies. Sec. I.
Printed Cretonne and Chintz. Sec. XIV.
Designs. Sec. I.
Printed Fabrics. Sec. XIV.

BROAD, WILLIAM, Stoke-on-Trent and other Schools, 1867–72. Worcester, 1874–76. South Kensington, 1876–1879.
Architectural Designs. Sec. XXI.
Wall Decoration. Sec. XXI.

BROADHEAD, GEORGE, Nottingham School, 1866–70.
(Broadhead, G.) 2 Lace Curtains. Sec. X.

BROADHEAD GEORGE, Players' Factory, Nottingham.
See BROADHEAD, GEORGE. Sec. X.

BROAD, JOHN, Lambeth School, 1874–80.
(Doulton & Co.) Dancing Figure, low relief. Terra Cotta Plaque. Sec. II.
(Doulton Pavilion.)

BROOKE, JOHN, Sheffield School, 1858–76.
Designs. Metalwork. Stoves. Secs. I., V.

BROWN, GERTRUDE L., Great Yarmouth School, 1872–76. 1878–84.
4 Designs. Muslins. Sec. I., XIV.

BROWN, JOHN, Glasgow School, 1878–1884.
(Barbour, Anderson & Co.) Silk Curtains. Sec. XV.

BROWN, JOHN, & OTHERS, Glasgow School, 1878–84.
School Work. Collective. Premiated Designs and Studies. Carpets. Decoration. Rennaissance Panel. Sec. I., XV., XVI.
See also FLETCHER, JAMES.
PARK, ALEXANDER.
FERRIS, RICHARD.

BROWN, JEMIMA E. A., Cirencester 1860–66.
3 Plates. Sec. II.
Woodcarving. Table. Bookcovers. Sec. VIII.
Carpet. Sec. XV.
Carved Wood Furniture. Sec. VIII.

BROWN, T. SWAFFIELD, Finsbury School, 1855–56.
(Hunt & Roskell). Silver Vases. Sec. VI.
Hawksley Testimonial. Sec. VI.

BROWN, W. & F., & CO., Chester.
See PINCHES, R. Sec. VIII.

BROWN, W. KELLOCK, West London School, 1881–84.
Studies. Designs for door furniture, &c. Sec. I., V.

BROWN, WILLIAM L., Salisbury School, 1879–84.
Design. Silk Hangings, &c. Secs. I., XII.

BROWN, WILMOT, Hanley School, 1882–84.
(Doulton & Co.) Four Vases. Porcelain. Sec. II.
Assisted by Mr. John Slater.

BROWNHILL POTTERY CO. (THE), Tunstall.
See FORD, R. Sec. II.
HUGHES, J. Sec. II.
PARR, JOSHUA Secs. II., V.
PARR, JOSEPH. Sec. II., V.

BROWNING, MARION, Salisbury School, 1878–83.
Design for Lace Handkerchief. Secs. I., X

BROWNSWORD, J. J., Derby School, 1876–84.
Damasks. Carpets. Sec. XV.

BRUCE, LIZZIE, Perth School, 1880, 1882–84.
Studies. Sec. I.

BRUCKMAN, F., Munich.
Christmas Cards.
See DUNDAS, JAMES. Sec. XVII.

BUCKNALE, WILLIAM, Nottingham School, 1874–81.
Designs for Lace Curtains. Sec. I., X.

BUDD, HENRY A. J., Lambeth School, 1870–73.
Designs. Wallpapers and Carpets. Sec. I.

BUDDEN, ALICE E., Lambeth School, 1878–84.
(Doulton & Co.) Keramics. Flower-pot. Sec. II.

BULLAS, WALTER, Sheffield, 1882–1884.
(Longdon & Co.) Metal Work. Sec. V.
See FIDLER, F.
LONGDON, H.

BURFIELD, FRANCES, Hastings & St. Leonards, 1876–81.
School Work. Watercolour. Stage 16. Sec. I.

BURGESS, ROSETTA C., Great Yarmouth School, 1874–84.
Designs. Muslins. Secs. I. XIV.
Architecture. Sec. XXI.
Cups and Saucers. Secs. II.

BURGH, CATHERINE, Cheltenham School, 1875–1884.
Designs. Silks. Secs. I., XII.

BURLTON, ALICE LOUISA, Lambeth School, 1877–78.
(Doulton & Co.) Keramics. Vase. Sec. II.

BURNETT, THOMAS STUART, Edinburgh School, 1866–76.
Statuettes. Sec. I. IX.

BURR, GEORGINA D., Lambeth School, 1878–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

BUSH, JOHN G. W., Bath, 1867–69.
Woodcarving. Panel. Sec. VIII.

BUTLER, CLEHOROW CAROLINE, West London School, 1881–83.
Study. "Hercules." Sec. I.

BUTLER, FRANK A., Lambeth School, 1874–84.
(Doulton & Co.) Keramics. Vases, Sec. II.
Doulton Pavilion. Sec. II.

BUTLER, JAMES, Nottingham School, 1875–83.
Designs for Lace Curtains. Secs. I., X.

BUTTERS, MARY, Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

BUTTERTON, MARY, Lambeth School, 1874–84.
(Doulton & Co.) Keramics. Amphora. Sec. II.
Designs for Cambrics. Sec. I., XIII.
Flower Studies. Sec. I.
Design. Tiles for Dados. Secs. I., II.

BUXTON, S., Stoke-on-Trent School, 1847–49.
(Minton Hollins.) Keramics. Panel of Painted Tiles. Sec. II.
Keramics. Tile Panel. Sec. II.

CALLOWHILL, CLARENCE, Worcester School.
Keramics. Vase. Sec. II.
Assisted by CALLOWHILL, JAMES.

CALLOWHILL, JAMES, Worcester.
(Royal Porcelain Works.) Keramics. Plates, Dessert and other, Vases. Sec. II.
Design for Panel. Sec. XVI.

CALLOWHILL, JAMES, & OTHERS, Worcester, 1851–60. 1869.
(Royal Porcelain Works.) Porcelain.
See HADLEY, JAMES.
BRADLEY, JAMES.
BATES, DAVID.
BOTT, JOHN. Sec. II.
CALLOWHILL, JAMES.

CALLOWHILL, JAMES CLARENCE, Worcester School, 1878–84.
(Royal Porcelain Works.) Designs. Keramics. Secs. I., II.

CALLOWHILL, SIDNEY, Worcester School, 1878–84.
Designs. Keramics. Vases. Plates. Secs. I., II.
Plaque. Keramic. Sec. II.
Assisted by CALLOWHILL, JAMES.

CAMBRIDGE SCHOOL OF ART (THE).
(H. W. Ellis). Wall Papers. Sec. XVI.

CAMERON, HENRY, St. Martin's School, W.C. 2 years.
Designs for Frames. Secs. I., XXII.

CAMERON, MARY, Dublin Metropolitan School, 1881–84.
Studies. Furniture Damask. Secs. I., XII.

CAMM, THOMAS W., Birmingham & Sponham Branch Schools, 1855–60.
(Camm, T. W.) Designs for domestic stained glass Windows. Secs. I., III.

CAMM, THOMAS W., Cambridge Street, Birmingham.
Stained Glass Windows. Designs. Secs. I., III.
(Assisted by Henry Reynolds, Birmingham and South Kensington Schools, and Thomas William Camm, Birmingham School.)

CAMPBELL, ALICE, Lambeth School, 1883–84.
(Doulton & Co.) Keramics. Faience jug. Sec. II.

CAMPBELL, CHARLES, Lambeth School; & SMITH, FREDERICK GEORGE, West London School.
Collective. Designs for Church Decorations and Stained Glass Windows. Secs. I., III., XVI.

CAMPBELL, CHARLES, Lambeth, 1860–64; & West London Schools, 1866–69.
Designs for stained glass and Decorations. Secs. I., III., XVI., XIX.
Tiles. Sec. II.
See also CAMPBELL, SMITH, & CAMPBELL.

CAMPBELL, DAVID, Halifax, 1880–1884. Glasgow, 1879.
(Ward, J. W. & Co.) Fabrics, Carpets. Sec. XV.

CAMPBELL, DUNCAN, Glasgow, 1847–52.
(Ward, J. W. & Co.) Fabrics. Sec. XV.

CAMPBELL, SMITH & CAMPBELL, 75 Newman Street, W.
Designs. Sec. I.
See CAMPBELL, CHARLES.
SMITH, FREDERICK GEORGE.
HAMMOND, EDWARD. Sec. III.
OLD LONDON.

CAMPBELL, J. E., Lambeth, and West London School.
See OLD LONDON.

CANDLER, ARTHUR, West London School, 2½ years.
Design. Panel, wood. Secs. I., VIII.

CANE, HERBERT C., West London School, 1½ years.
Design. Mirror frame. Secs. I., V.

CANTON, SUSAN R., Bloomsbury School, 1871–78.
Designs. Plaster Spandril 23*e*. Secs. IX.
Spandril, Mudie design. Sec. I.

CANTRELL, JOHN, Kidderminster.
Technical Drawings. Carpet Design. (Assisted by William Tucker, Head Master.) Sec. XV.

CANTY, LUCY M., Lambeth School, 1883–84.
(Doulton & Co.) Keramics. Flower Vase. Sec. II.

CAPES, MARY, Lambeth School, 1874–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

CAPES, MAY, Lambeth School, 1878, 1879, 1881.
(Doulton & Co.) Keramics. Vase. Sec. II.

CAPEY, ARTHUR J., Burslem School, 1879–84.
(Bodley & Co.) Keramic. Dessert Plates. Sec. II.

CARDER, FREDERICK, Stourbridge School, 1879–84.
(Stevens & Williams.) Personal. Glass. Sec. III.

CAREY & SONS, Nottingham.
Lace Curtains.
See DRAKE, GEORGE E. Sec. X.

CARLISLE & CLEGG, Queen Victoria Street, E.C.
Wall Papers.
See ADAMS, C. J. Sec. XVI.

CARMICHAEL, ALEXANDER, Worcester School, 1877–84.
School Study. Sec. I.

CARNEGIE, IDA F., Dublin Metropolitan School, 1878–84
Designs. Studies. Sec. I.

CARPENTER, ALFRED, West London School, 1882–84.
Study. Decoration. Sideboard. Mantels. Secs. I., VIII., XVI.

CARR, JOHN M., Nottingham School, 1876–78.
Designs, Lace Curtains. Secs. I., X.

CARR, MABEL, Cork School, 1880–84.
(Meade, Eliza.) Personal. Lace. Sec. X.

CARTER, C. J., Kidderminster School, 1873–84.
Technical Designs. Studies. Carpets. (Assisted by William Tucker, Head Master.) Secs. I., XV

CARTER, G. A., Lambeth School, 1863–68.
(Hunt & Roskell.) Silver group. Sec. VI.
(Hunt & Roskell.) Silver group. Sec. VI.
(Hunt & Roskell.) Silver group. Sec. VI.
(Lent by Sir John Astley.)
(Hunt & Roskell.) Gold Belt. Sec. VII.

CARTER, MARY E., Queen Square School, Bloomsbury, 1876–82.
School Study in Sepia. Sec. I.

CARTWRIGHT, ARTHUR, Macclesfield School, 1875–84.
Design for Furniture Silk.
Secs. I., XII.
(Birchenough & Co.) Carpets. Sec. XII.

CARTWRIGHT, HERBERT, Burslem School, 1870–72. 1873–76. 1877–79.
(Bodley & Co.) Keramics. Plates.
Sec. II.

CASH, J. & J., Coventry.
See GREEN, J. S. Sec. XII.

CASTLE, THOMAS C. H., Birkenhead, 1875–82.
Study in monochrome. Horse's Head.
Sec. I.

CATCHPOOL, HERBERT, West London School, 2½ years.
Study. Still Life. Sec. I.

CANTRELL, JOHN, Kidderminster School, 1873–81.
Designs. Carpets. Secs. I., XV.

CHADBOURNE, STEPHEN L., Nottingham School, 1875. 1880–84.
Designs, Wall Papers. Secs. I., XVI.

CHALLIS, MARGARET, Lambeth School, 1875–77.
(Doulton & Co.) Keramics. Vase.
Sec. II.

CHAMBERS, J. H., Halifax, 1874–83.
(Ward, J. W., & Co.) Personal. Carpets.
Sec. XV.

CHAMBERS, MICAH, Durham School, 1854–59.
(Henderson & Co.) Carpets. Sec. XV.

CHANCE, JANE, West London School, 1876–84.
Designs. Embroidery. Studies, &c.
Sec. I., XII.

CHANDLER, EMILY, Lambeth School, 1879–84; & City & Guilds Institute.
(Doulton & Co.) Keramics. Flower Pot. Sec. II.

CHAPLIN, WALTER H., Coventry School, 1874–84.
Studies. Sec. I.

CHATTAWAY, HERBERT, Coventry School, 1869–76.
Studies. Iron Screens. Sec. I. V.

CHESTERTON, WALTER, Walsall School of Art, 1875–77.
Design. Metal Work. Sec. V.

CHILDE, ANDREW, Coalbrookdale, 1879–84.
(Maw & Co.) Keramics. Tiles. Sec. II.

CHISHOLM, D., Royal Albert Hall School; South Kensington School, 1869 or 1870.
Wood Carving. Oak Frame, £6 6s.
Sec. VIII.

CHIVERS, CEDRIC, Bath, 1876–77.
Bindings. Sec. XVIII.
Photographs. Sec. XX.

CHRIPPES, WALTER, West London School, 6 years.
Designs. Tapestry, Carpets, Papers.
Secs. I., XV., XVI.

CHRISTIAN, H.R.H. PRINCESS,
A Lace Veil.
See CLARKE, MARGARETTA. Sec. X.

CHURCHER, G. P., South Kensington School, 1859.
(Woollams.) Decorations. Sec. XVI.

CLACK, MRS. T., South Kensington Schools, 1863–65.
Study. Flower Group in water colour.
Sec. I.

CLAPHAM, MARY, West London School.
Designs. Studies. Architecture. Cups and Saucers. Secs. I., II., XXI.

CLULOW, WILLIAM JAMES, Macclesfield School, 1875–83.
Design for Silk Handkerchief.
Secs. I., XII.
Designs for Furniture Silk, Damasks and Hangings. Secs. I., XII.

CLARK, ROBERT, Edinburgh School, 1875–77.
(Morton, W., Scott, & Co.) Tile Painting. Sec. II.

CLARKE, J., Gloucester School, 1861–1872.
Drawings. Sec. I.
Carved stone. Sec. IX.

CLARKE, JAMES, South Kensington School.
Four School Studies. Sec. I.
Study in Chalk, from cast. Sec. I.

CLARKE, MARGARETTA, Queen Square School, Bloomsbury, 1858–62.
(Mrs. Clarke.) Lace Veil. Sec. X.
Lent by H.R.H. The Princess Christian.
(WITHDRAWN.)

CLAY, SONS, & TAYLOR, Bread Street Hill, E.C.
See COWARD, W. G. Sec. XIX

CLAYTON, E. W., Sheffield School, 27 Allen Terrace, Beaufort House, Chelsea.
Electrotype Goods. Sec. VI.
A Flagon. Bouquet Holders.
(Voucher is, Agenda, No. 1539a. 16 April, 1884.)

CLEWS, JOHN, Nottingham School, 1875–82.
Designs, Wall Papers and Lace Curtains. Secs. I., X.

CLISSOLD, C. W., St. Martin's, W.C., 1877. Draycott Street, S.W., 1877, 1879. South Kensington, 1879–82.
Silver Work. Sec. VI.

CLOW, JOHN J., Exeter School, 1879.
Wood Carving. 2 Panels. Sec. VIII.

COALBROOKDALE IRON CO. (THE).
See KERSHAW, J. Sec. V.
MOSES, J. Sec. V.
SHEPHERD, G. W. Sec. V.
MORTON, W. SCOTT. Sec. V.

COATES, WILLIAM, Nottingham School, 1870–78.
(Heymann & Co.) 5 Lace Curtains. Bed-cover. Sec. X.

COBELY, WILLIAM H., West London School, 3 years.
Designs Chalk Study. Sec. I.

COCKRILL, W. B., Great Yarmouth School, 1867–77.
Studies. Ornament. Sec. I.
Design for Inlaid Work. Sec. VIII.

COLE, EDWIN, Shrewsbury, 1873–84.
Decorations. Personal. Sec. XVI.

COLEMAN, EDITH M., Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vases. Sec. II.

COLLIS, JANE J., Salisbury School, 1874–83.
Designs. Carpet, Muslin, Fabrics, Glass. Secs. I., III., XIII., XV.

COMLEY, JAMES W., Coventry School, 1876–84.
Studies. Sec. I.

CONAN, JEANIE C., Dublin Metropolitan School, 1880–84.
Study. Sec. I.

CONNOLLY, ARTHUR, Stoke-on-Trent & Fenton School, 1882–84.
2 Dessert Plates. Sec. II.
Keramics, per Mintons.

CONNOLLY, WILLIAM, Dublin Metropolitan School, 1881–84.
Study. Sec. I.

CONSTABLE, T. & A., & CO., Edinburgh.
See BLACK, W. S.
Secs. XVII., XIX.
GULLAND, ELIZABETH. Sec. XXII.

CONWAY, JAMES, Hastings & St. Leonards, 1877–83.
School Work. Sec. I.

COOK, EMILY ANNIE, West London School, 1873–78. 1878–82.
School Studies. Sec. I.

COOK, FANNY L., West London School, 4 years.
Study in Oil. Sec. I.

COOK, LUCY E. M., Sheffield School, 1881–84.
Wood Carving. Panel. Sec. VIII.

COOKE, ERNEST O., Nottingham School, 1879–84.
Studies in Oil. Sec. I.

COOPER, WILLIAM, Hastings & St. Leonards School, 1876–84.
Architecture. Sec. XXI.

COPE, J., Stoke-on-Trent. Hanley School, 1869. South Kensington, 1870–71.
(Cope, J.) Keramics. Toilet Service. Slabs inlaid. Slabs for cabinets. Sec. II.
(Cope, J.) Keramics. Enamelled Slabs. Toilet Ware. Spill, pate sur pate. 2 plates. Sec. II.

COPE, J., Cliff Bank, Stoke-on-Trent.
See COPE, J. Sec. II.

COPPING, HAROLD, West London School, 1877–82.
Studies. Sec. I.

CORBITT, W. & CO., Rotherham.
See ILLSTON, G. A. Sec. V.

CORPORATION (THE), West Bromwich.
Gold Chain and Badge of: (Withdrawn.)
Silver Mace of:
See TONKS, JOSEPH W. Secs. VI., VII.

CORPORATION (THE), Stoke-on-Trent.
Gold Chain and Badge of:
See TONKS, JOSEPH W. Sec. VII.

CORPORATION (THE), Rotherham.
Gold Chain and Badge of:
See TONKS, JOSEPH W. Sec. VII.

CORPORATION (THE), of Bangor, North Wales.
See TONKS, JOSEPH W. Sec. XXII.

CORPORATION OF ACCRINGTON BOROUGH.
See TONKS, JOSEPH W. Sec. XXII.

CORPORATION OF BACUP BOROUGH.
See TONKS, JOSEPH W. Sec. XXII.

COTTON, ALFRED, Kidderminster, 1862–67.
DIXON, H. J., & SONS.
SHAW, E., & Co.
WOODWARD, GROSVENOR, & Co.
Personal. Carpets. Sec. XV.

COULTHURST, or COULTHARD, FRANK, Bath, 1884.
Illumination. Sec. XVIII.

COURT, W. H., Birmingham, 1881–82.
Engravings. Sec. XIX.

COWARD, W. GRATUS, Cambridge School, 1872–78.
(Clay, Sons, & Taylor.) Engravings. Sec. XIX.

COWLISHAW, NICOL, & CO., Manchester.
Collective Exhibit.
See ALEXANDER, JOHN, and OTHERS.
MANCHESTER SCHOOL OF ART. Secs. XII. & XV.
HAITÉ, G. C. Sec. XII.
JONES, W. Sec. XV.
HAY, THOMAS W. Sec. XII.
BLACK, J. J. Secs. XII., XVI.

COWTAN & SONS, Oxford Street, W.
Furniture. Sec. VIII.
See FREDERICK MÜNTZER.

COX, MARY, Worcester School, 1870–80.
Designs. Metal work. Keramics. Plates. Secs. I., II., V.

COX, WALTER, West London School, 1879–82.
Engraving. Sec. XIX.

CRACKNELL, ELLEN KATHLEEN, Yarmouth School, 1877–81.
(Hunt & Roskell.) Claret Jug Designs. Secs. I., III., VI.

CRANMER, GEORGE, Birmingham School, 1874–82.
Metal Work. Sec. V.

CRASTON, FRANK R., Manchester School, 1876. 1878–79. 1883–84.
School Work. Decoration. Secs. I., XVI.

CRAVEN DUNNILL, & CO., Ironbridge, Salop.
See LEDWARD, R.A. Sec. II.
DAVIS, WILLIAM. Sec. II.
LEIGHTON, F. Sec. II.

CRAVEN, J., Selby, 1878–84.
School Work. Sec. I.

CRAWFORD, GEORGE, Stoke-on-Trent & Fenton School, 1883–84.
1 Dessert Plate. Sec. II.
Keramics per Mintons. Voucher Reg. No. 3541. 9th April, 1884.

CRAWLEY, MINNA, Lambeth School, 1874–80.
(Doulton & Co.) Keramics. Vase. Flower Bowl. Sec. II.

CRICHTON, ALEXANDER, Edinburgh School, 1861–66.
(Mackay & Cunningham.) Silver Plate. Sec. VI.

CRICHTON, JOHN, Edinburgh School, 1860–64.
(Mackay & Chisholm.) Silver Plate. Sec. VI.

CROFTS & ASSINDER, Birmingham.
See MADDOX, T. W. Sec. V.

CROOK, JAMES, Worcester School, 1862–80.
Design. Porcelain Vase. Secs. I., II.

CROOM, J., Londonderry School, 1880–83.
Designs. Wrought Iron Gates. Secs. I., V.

CROSLEY, EDITH A., Lambeth School, 1875–84.
Studies. Sec. I.

CROSS, ALFRED W., Hastings & St. Leonards, 1877–80.
Architecture. Drawings. Sec. XXI.

CROSS, JESSIE M., Dorchester School, 1872–76.
School Work. Sec. I.

CROSSLEY, FREDERICK, Halifax, 1872–76.
(Ward, J. W., & Co.) Carpets. Sec. XV.

CROSSLEY, JOHN, & CO., Halifax.
(Robinson, Herbert) Sec. XV.

CROWE, CATHARINE D., Dublin Metropolitan School, 1881–84.
Study. Still Life. Sec. I.

CRUIKSHANK, JAMES R., Lambeth School, 1878–84.
(Doulton & Co.) Keramics. Vase. Sec. II.
(Doulton Pavilion.) Sec. II.

CULL, FREDERICK WILLIAM, York, 1882–84. Charterhouse, 1880–1882.
School Work. Sec. I.

CUMMING, J. FORRESTER S., Leicester School, 1881–84.
Design Carpet. Secs. I., XV.

CUNDALL, FLORENCE J., Bristol School, 1879–84.
Studies. Botanical; Models in Sepia. Sec. I.

CUNNINGTON, MARY M., Dorchester School, 1870–74.
School Work. Sec. I.

CURTIS, LILIAN, Lambeth School, 1881–83.
(Doulton & Co.) Keramics. Flower Pot. Sec. II.

CUTHBERT, MINNIE, Hastings & St. Leonards, 1879, for 4⅔ years.
School Work. Sec. I.

CUTTS, JOHN, Nottingham School, 1870–72.
(M. Jacoby & Co.) Lace Curtains. Nine Edgings. Sec. X.

CUTTS, THOMAS B., Nottingham.
Lace Edgings. Sec. X.
See STAYNES, F.

DADD, STEPHEN T., West London School, 1879–82. 1884.
Christmas Cards. Sec. XVII.

DALGLEISH, THEODORE J., Coventry School, 1870–74.
Studies. Sec. I.
Designs for Iron Gates, &c. Sec. V.

DALTON, JOSEPH, Hanley School, 1874–84.
Two Registered Plaques (Painted Views), 63*s.* each. Sec. II.
Two Registered Plaques (Painted Views), 80*s.* each. Sec. II.
Keramics per Mintons. Voucher Reg. No. 3541, 9th April, 1884.

DANCEY, H. A., Gloucester School, 1874–81.
Architectural Drawings. Secs. I., XXI.

DANIELS, GEORGE, Spitalfields School, 1866–79.
Designs. Metal Work. Illuminations, &c. Secs. I., V., XVIII.

D'ARCY, LOUISA, Dublin Metropolitan School, 1878–84.
Studies. Sec. I.

D'ARCY, MARIANNE A., Dublin Metropolitan School, 1878–84.
Studies. Sec. I.

DARTON, WILLIAM, Plymouth School, 1876–84.
School Work. Sec. I.

DAVENPORT, MESSRS., Longton.
Porcelain and Pottery.
See MARSH, J. F. Sec. II.

DAVEY, ARTHUR JAMES, Torquay School, 1873–84.
(Watcombe Terra Cotta Co.) Keramic Ware. Terra Cotta. Panel. Secs. II., IX

DAVIES, MINNIE M., West London School, 2 years.
Studies. Sec. I.

DAVIS, HARRY ALBERT, Dudley School, 1877.
(Webb, T., & Sons.) Glass Vase. Sec. III.

DAVIS, HARRY A., Dudley School.
(T. Webb & Sons.) Glass Ware. Sec. III.

DAVIS, LOUIS, South Kensington Schools, 1876–84.
Painted Decoration. Frieze. Sec. XVI.

DAVIS, LOUISA J., Lambeth School, 1876–78.
(Doulton & Co.) Keramics. Jardinière. Sec. II.

DAVIS, MARY Lambeth School, 3 years.
(Doulton & Co.) Keramics. Vase. Sec. II.

DAVIS, OWEN, West London School, 1862–63.
(Woollam's) Paperhangings. Sec. XVI.
Decoration. Sec. XVI.

DAVIS, W. H., Birmingham, 1874–80.
Engine Model. Sec. XXII.

DAVIS, WILLIAM, Cardiff School, 4 years.
(W. Davis & Son.) Decorations. Painted. Sec. XVI.

DAVIS, WILLIAM, Coalbrookdale School, 1879–84.
School Work. Designs, Tazza, &c Secs. I., II.
(Craven, Dunnill, & Co.) Tiles. Sec. II.

DAVIS, W., & SON, Queen Street, Cardiff.
Painted Decoration.
See DAVIS, WILLIAM. Sec. XVI.

DAWE, LAURA Plymouth School, 1876–82.
School Work. Studies. Sec. I.

DAWSON, CHARLES F., The Salt Schools, Shipley, 1882–84. Bingley, 1877–82.
Decorations. Sec. XVI.

DAWSON, JAMES E., Macclesfield School, 1877–82.
Design for Silk Handkerchief. Secs. I., XII.

DEAN, EDWIN, Stoke-on-Trent & Fenton School, 1878–80.
Two Bottles, 26*s.* 6*d.* each. Sec. II.
Keramics per Mintons. Voucher Reg. No. 3541, 9th April, 1884.

DEAN, THOMAS, Hanley School, 1869–81.
Two Tiles, 8 in. by 8 in. 12*s.* each. Sec. II.
Keramics per Mintons. Voucher Reg. No. 3541, 9th April, 1884.

DE LA RUE & CO., Bunhill Row, E.C.
See West, Alice L. Sec. XVII.
See Thomson, Emily G. Sec. XVII.

DENLEY, MARY, Lambeth School, 1876–84. Westminster (S. Mary's).
(Doulton & Co.) Keramics. Vases. Plaques. Sec. II.
Designs. Carpet, Tiles, China, &c. Sec. I., II., XV.

DENNIS, ADA, Lambeth School, 1880–84, and City and Guilds Institute, 1 year.
Design. Wood Inlay. Sec. I., VIII.
(Doulton & Co.) Keramics. Vase. Sec. II.

DEPARTMENT OF SCIENCE & ART (THE).
See Science and Art Department. South Kensington Schools.

DERBY CROWN PORCELAIN COMPANY, Derby.
Keramics. Sec. II.
See Lambert, George F.
Lunn, Richard. Secs. II., VI.

DERBY CENTRAL SCHOOL OF ART, Derby.
Collective Exhibit by Students. Illuminated Address. Sec. XVIII.
See Bailey, George.
Marples, Thomas.
Turner, F. E.
Batchelor, M. H.
Holtzendorf, Count.
Joseph, Ada M.
Goodwin, Ada.
Ward, George.
Hogg, Herbert.
Wale, J.

DE SATOR, EDMUND, C.B., Dublin Metropolitan School, 1856–74.
Study. "Laocoön." Sec. I.

DEWSBERY, DAVID, Burslem School, 1870–77.
(Doulton & Co.) Vases, Porcelain, and Sets. Sec. II.
Assisted by Mr. John Slater.

DEWSBERY, GEORGE, Burslem School, 1872–77.
(Doulton & Co.) Vases, Porcelain.
Assisted by Mr. John Slater. Sec. II.

DEWSON, THOMAS, Manchester School, 1854–59.
(Goodall, E., & Co.) Furniture. Sec. VIII.

DICK, MATTHEW, Kilmarnock School, 1877–81.
School Work. Machine Drawing. Sec. I.

DICKIE, JOHN E., Kilmarnock School, 1869–72.
School Work. Decoration. Secs. I., XVI.

DICKISON, AGNES J., Dover School, 1872–75. 1878–84.
4 Designs. Lace. Secs. I., X.
Designs. Lace-set.

DICKSON, H. J., & SONS, Kidderminster.
See Cotton, Alfred. Sec. XV.

DILWORTH, SAMUEL, Halifax School, 1875–83.
(Ward, J. W., & Co.) Hangings. Sec. XV.

DIXON, W. H., Broseley School, 1858–1860.
(Mintons.) Keramics. Panels. Sec. II.
(Minton, Hollins.) Keramics. 2 Panels Painted Tiles. Sec. II.

DIXON, H. J., & SONS, Kidderminster.
Carpets.
See Kingman, Geo. Sec. XV.

DOBBS, FREDERICK H., Nottingham School, 1871–77.
Designs, Lace Curtains. Secs. I., X.

DODD, C. T., South Kensington Schools, 1879–84.
Design. Clock Case. Secs. I., V.
Drinking Cup, Silver. Secs. I., VI.

DONOHUE, THOMAS J., Macclesfield School, 1878–84.
Design for Furniture. Silk. Secs. I., XII.
Design for Embroidered Silk Cover. Secs. I., XII.

DORAN, THOMAS E., Macclesfield School, 1879–84.
Design for Silk Hanging. Secs. I., XII.
Design for Silk Handkerchief. Secs. I, XII.
(Birchenough & Co.) Satin Damask Dress. Silk Handkerchief. Sec. XII.

DORMAN, ANNIE LOUISE, Hastings and St. Leonards, 1879–84.
School Work. Sec. I.

DOUGHTY, EDWIN, Nottingham School, 1867–69.
Designs, Lace Shawl. Secs. I., X.

DOUGLAS, HILDA, Dublin Metropolitan School, 1879–84.
Designs. Inlaid Border. Secs. I., VIII.
Study. Anatomical. Sec. I.

DOUGLAS, ROBERT S., Dundee School, 1876–81. 1883–84.
School Work. Engineering Drawing. Bridge. Secs. I., XXI.

DOULTON & CO., Burslem and Lambeth.
Pavilion. Decorative exhibit of Doulton ware applied to architecture and ornamentation. The details designed by about 130 Students of Lambeth and Burslem Schools of Art. Sec. II.

DOULTON & CO., Nile Street, Burslem.
Porcelain Ware, &c. Sec. II.
See ALLEN, ROBERT. Sec. II.
BROWN, WILMOT. Sec. II.
DEWSBERY, DAVID. Sec. II.
DEWSBERY, GEORGE. Sec. II.
ELLIS, SAMUEL. Sec. II.
HANCOCK, FREDERICK. Sec. II.
JOHNSON, WILLIAM. Sec. II.
LANGLEY, LEONARD. Sec. II.
ROBERTS, JOSEPH. Sec. II.
SEADON, ROBERT. Sec. II.
WORTON, JAMES. Sec. II.
WRIGHT, ALBERT. Sec. II.
SLATER, JOHN.
BOARDMAN, W. Sec. II.
BRATT, J. W. Sec. II.
KELSALL, A. R. Sec. II.
LEDWARD, RICHARD A. Sec. II.
OAKES, JANE. Sec. II.
TATLER, ALBERT. Sec. II.
WOOD, FREDERICK. Sec. II.

DOULTON & CO., Lambeth Art Pottery Works, Lambeth, S.
Keramics, &c. Sec. II.
See ADAMS, MATILDA S.
ALLEN, F. J.
AITKEN, MARGARET.
ARDING, HELEN, A.
ARDING, MARY M.
BALL, EDITH H.
BARKER, CLARA S.
BARKER, ALICE M.
BARLOW, HANNAH B.
BARLOW, LUCY A.
BARLOW, FLORENCE E.
BARON, WILLIAM.
BECK, ACIDALIA.
BOWEN, ELIZA F.
BROAD, JOHN.
BUDDEN, ALICE E.
BUTLER, FRANK A.
BUTTERS, MARY.
BUTTERTON, MARY.
BURR, GEORGINA D.
BURLTON, ALICE L.
CAMPBELL, ALICE.
CANTY, LUCY M.
CAPES, MARY.
CAPES, MAY.
CHALLIS, MARGARET.
CHANDLER, EMILY.
COLEMAN, EDITH M.
CRAWLEY, MINNA.
CRUIKSHANK, JAMES R.
CURTIS, LILIAN.
DAVIS, LOUISA J.
DAVIS, MARY.
DENLEY, MARY.
DENNIS, ADA.
DURTNALL, BEATRICE M.
DURTNALL, JOSEPHINE A.
DURTNALL, LULU EMOGENE.
ECKENSTEIN, ALICE.
EDWARDS, LOUISA E.
ELLIOTT, AMY.
EMERTON, ELIZABETH.
EVANS, BERTHA.
EYRE, J.
FISHER, ELIZABETH.
FORCEY, FMILY.
FRENCH, ELIZABETH.
GANDY, JESSIE.
GATHERCOLE, ELLEN.
GARBETT, NELLIE.
GOLDSACK, LILIAN.
GREEN, ALBERTA.
GROOM, ALICE.
HAREY, SARAH M.
HAUGHTON, LIZZIE.
HAWKSLEY, EMILY
HAYS, ANNA.
HIERAPATH, ALICE M.
HINCHLIFF, JESSIE.
HOLLIS, ELIZA.
HORNE, AGNES.
HUGHES, CATHERINE M.
KEEN, ROSA.
KING, HENRY JAMES.
LARCHEN, ULRIQUE A.
LEE, FRANCES.
LEE HARRIET.
LEWIS, FLORENCE.
LEWIS, ISABEL.
LEWIS, MARY AGNES.
LILLEY, ELIZABETH A.
LUPTON, EDITH B.
LONDON, EMILY A.
MCLELLAN, J. H.

Miller, Isabel.
Moore, Amy G.
Nettleworth, Lizzie.
Newnham, Josephine.
Nunn, J. W.
Parker, William.
Pearce, A. E.
Roberts, Emma.
Roberts, Florence.
Rogers, Edith.
Rogers, Isabel.
Rogers, Kate.
Rogers, Martha M.
Rumble, E. L.
Rumbol, Ellen.
Russell, Louie.
Simmance, Eliza.
Small, Elizabeth M.
Smallfield, Katharine.
Smith, Ellen B.
Smith, Gertrude.
Stormer, Emily Edith.
Stuart, Louisa.
Thatcher, Euphemia.
Thompson, Minnie.
Vargas, Miss.
Wakely, Louisa.
Waters, Lizzie.
Youatt, Bessie J.

D'OUSELEY, SOPHIE, Bath School, 1882–83.
School Study. Sec. I.

DOWLING, RICHARD, Dublin Metropolitan School, 1869–73.
Studies. Architecture. Secs. I., XXI.

DOWNES, ANNABEL, South Kensington Schools, 1877–84.
Studies from Life. Sec. I.

DRAKE, GEORGE E., Halifax School, 1865–69.
(D. Walters & Sons). Designs. Silk Fabrics. Sec. XII.
(Carey & Sons.) 2 Lace Curtains. Sec. X.
Tapestry. Sec. XV.
(Scott, Cuthbertson & Co.) Wall Papers. Sec. XVI.

DUBLIN MUSEUM OF SCIENCE AND ART.
Specimens of Irish Lace. Sec. X.

DUCK, DANIEL, Kidderminster. 1868–73, Coventry School.
(Harrison, C.; Naylor, T. & A.; Shaw, E., & Co.; Whittall, M., & Co.; Worth, T. B.) Fabrics. Woollen. Sec. XV.
See also Park, J. H. Carpets, &c. Sec. XV.

DUFF & CO., Edinburgh.
Wall Papers. Sec. XVI.
See Hay, Thomas W.

DUFFIELD, E., Birmingham School, 1868–84.
(Elkington & Co.) Enamels, Metal. Sec. IV.

DUFFY, JAMES, Dublin.
See Perry, William. Sec. XVII.

DUMET, MONS., Paris.
Silk. Secs. XII., XVI.
See Hay, Thomas W.

DUNDAS, JAMES, Dundee School, 1855–59. South Kensington, 1859–1864.
(Bruckman, F., Munich; Schipper, J. F., & Co.; Eyre & Spottiswoode; Hildesheimer & Falkner.) Personal. Christmas Cards. Sec. XVII.

DUNLOP, MORTON J., Kilmarnock School, 1875–82.
School Work. Wall Papers. Secs. I., XVI.

DUNTHORNE, R., Vigo Street, Regent Street, W.
Etchings.
See Slocombe, Charles P. Sec. XIX.
Slocombe, Frederick A. Sec. XIX.

DURTNALL, BEATRICE, Lambeth School, 1875–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

DURTNALL, JOSEPHINE, Lambeth School, 1882–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

DURTNALL, LULU I., Lambeth School, 1882–84.
(Doulton & Co.) Keramics. Jug. Sec. II.

DUTTON, THOMAS, Nottingham School, 1879–81. 1884.
Designs, Lace Fabrics. Curtains. Secs. I., X.

DYSON, CHARLES H., Macclesfield School, 1880–84.
Design for Silk Handkerchief. Secs. I., XII.

EASSIE, MRS., Gloucester, 1863–78.
Fan. Illuminations. Dessert Plates. Designs. Secs. I., II., VII., XVIII.

EASTLAKE, ELIZABETH, Plymouth School, 1880–84.
School Work. Sec. I.

EASTWOOD, H., & CO., Netherton.
See Thomas, John. Sec. XV.

ECCLESTON, GEORGE, Stoke-on-Trent & Fenton School, 1880–84.
Two Dessert Plates. Sec. II.
Keramics per Mintons. Voucher Reg. No. 3541, 9th April, 1884.

ECKENSTEIN, ALICE, Lambeth School, 1880–84.
(Doulton & Co.) Keramics. Bottle Vase. Sec. II.

EDMUNDSON & SON, R. B., Manchester.
See JENKINSON, THOMAS. Sec. III.
PURCELL, ROBERT. Sec. III.
SAVAGE, WILLIAM. Sec. III.

EDWARDS, CHARLES G., West London School, 3 years.
Design. Wall Papers. Secs. I., XVI.

EDWARDS, ERNEST H., Manchester School, 1882–84.
(Falkner, G., & Sons.) Decoration. Sec. XVIII.

EDWARDS, G., & SONS, Glasgow.
See MILWAIN, W. J. Sec. VI.

EDWARDS, T. G., Sheffield School, 1871–79.
Designs. Staircase. Secs. I., VIII.

EDWARDS, LOUISA, E., Lambeth School, 1876–83.
(Doulton & Co.) Keramics. Vase. Sec. II.

EDINBURGH, HIS ROYAL HIGHNESS THE DUKE OF, K.G., K.T.
Majolica Ware Dish.
See GAMBLE, JAMES. Sec. II.

EDINBURGH, HER ROYAL AND IMPERIAL HIGHNESS THE DUCHESS OF.
Studies of Flowers in Oils.
See HANCOCK, ISABEL. Sec. I.

ELKINGTON & CO., Birmingham & London.
See ALLEN, GEORGE. Sec. VI.
BEATTIE, CHALLEN. Secs. V., VI.
DUFFIELD, E. Sec. IV.
FELLOWS, H. Sec. VI.
HARPER, F. Sec. V.
JACKSON, F. Sec. VI.
SPALL, T. Secs. V., VI.
WATKINS, JOHN. Sec. V.

ELLIOTT, FANNY, Lambeth School, 1875–79.
(Doulton & Co.) Keramics. Vase. Sec. II.

ELLIOTT, JOHN W., Preston School, 1878–81.
School Work. Sec. I.

ELLIOTT, J. W., Manchester School, 1881–83.
School Work. Panel Decoration. Secs. I., XVI.

ELLIS, H., Lambeth School.
Doulton Ware. Doulton Pavilion. Sec. II.

ELLIS, H. W., Cambridge School, 1867–70.
Wall Papers. Sec. XVI.
Wall Papers. (Woollam's.) Sec. XVI.

ELLIS, JOHN, Hanley School.
(S. & A. Dept.) Photograph. Design for a Bracket in Plaster. Decoration. Premiated 1875 by Plasterers' Company. Sec. XVI.

ELLIS, SAMUEL, Hanley School.
(Doulton & Co.) Two Plaques. Landscapes. Porcelain. Sec. II.
Assisted by Mr. John Slater.

ELLIS, T. S., MRS., Gloucester, 1861–66.
Drawings. Sec. I.

ELSWORTHY, HENRI C., Hastings & S. Leonards, 1878–81.
Architecture. Sec. XXI.

ELWOOD, MARION L., Nottingham School, 1876–84.
Designs. Lace Fabrics, Curtains. Secs. I., X.

EMERTON, ELIZABETH, Lambeth School, 1 year and 5 months.
(Doulton & Co.) Keramics. Vase. Sec. II.

EMERY, T. Stoke-on-Trent School.
(Minton, Hollins, and Co.) Keramics. Tiles. Sec. II.

EMERY, ALBERT J., Bristol School, 1878–84.
Study. Chalk Drawing from Antique. Sec. I.

EMMS, JOHN, Yarmouth School, South Kensington Schools, 1865–66.
Study. Tempera Painting from Nature. Sec. I.

ERRINGTON, C., Coventry, 1865–73.
(Rotherham & Sons.) Watch Cases. Sec. VII.

EVANS, BERTHA, Lambeth School, 1877–81. 1884.
(Doulton & Co.) Keramics. Biscuit Box. Sec. II.

EVANS, J. A., Gloucester, 1878–83.
School Work. Design for a Truss Secs. I., IX.

EVANS, MISS, South Kensington School.
Study in Oil from Life. Sec. I.

EVERITT, FREDERICK, West London School, 2½ years.
Schoolwork. Sec. I.

EYRE & SPOTTISWOODE, Great New Street, E.C.
Christmas Cards.
See DUNDAS, JAMES. Sec. XVII.

EYRE, J.
(Doulton & Co.) Faience Tile Panels. Sec. II.

FACER, JABEZ, Stourbridge School, 1860–66.
(T. Webb & Sons). Glass Vases, Toilet and Scent Bottles. Cameo-cut Glass. Sec. III.

FALKNER, G., & SONS, Manchester.
See EDWARDS, ERNEST H. Sec. XVIII.
MARSH, A. H. Sec. XVII.
SMITH, HENRY. Sec. XVII.
THOMSON, EMILY G. Sec. XVII.

FARMAN, AGNES ETHEL, Leicester School, 1880–84.
Study. Monochrome. Sec. I.

FASTER [or FOSTER], W. G., Leeds School, 1877–84.
School Work. Freehand Drawings. Sec. I.
Christmas Cards. Sec. XVII.

FAULKS, HENRY, Birmingham, Severn Street School, 1879–81.
(Newman, A.) Ornamental Iron Work. A Cabinet Escritoir. (Lent by Samuel, S.) Sec. V.

FAYERS, GEORGE, West London School, 1875–76. 1884.
Designs. Various. Sec. I., XII., XIII., XVI.

FELGATE, E. S., York School, 1875–83.
Architecture. Sec. XXI.

FELLOWS, H., Birmingham School, 1858–59.
(Elkington & Co.) Silver and Electro Plate. Sec. VI.

FEMALE CHROMO-LITHOGRAPHIC STUDIO, Royal Albert Hall, Kensington, W., 1883.
The Students (17 Imperial and 3 other Frames) Chromo-lithographs. Sec. XVII.
Per National Art Training Schools, South Kensington. (Sir P. C. Owen, K.C.M.G., C.B.)

FEMALE CHROMO-LITHOGRAPHIC STUDIO, 33 Red Lion Square, W.C., 1883.
The Students (4 Imperial Frames) Chromo-lithographs. Sec. XVII,
Per Queen Square School, Bloomsbury, W.C. (Sir P. C. Owen, K.C.M.G., C.B.)

FENESSY, MRS.
See SELOUS, EMILY.

FEREDAY, JOHN T., Dudley.
(Webb, T., & Sons.) Glass Vase. Sec. III.

FEREDAY, JOHN T., Dudley School, 1867–68.
(T. Webb & Sons.) Glass Ware. Sec. III.

FERGUSON, T., & CO., Banbridge, Ireland.
See LANE, J. QUILLER. Sec. XI.

FERRIS, RICHARD, & OTHERS, Glasgow School, 1881–84.
Premiated Designs. Sec. I.
Carpets. Sec. XV.
Decoration. Sec. XVI.
Renaissance Panel.
See BROWN, JOHN.
FLETCHER, JAMES.
PARK, ALEXANDER.

FERRYHOUGH, GEORGE, Newcastle-under-Lyme School, 1870–84.
One Dessert Plate, 94*s.* 6*d.* Sec. II.
One Dessert Plate, 94*s.* 6*d.* Sec. II.
One Dessert Plate, 75*s.* 0*d.* Sec. II.
Two Bottles, £5 11*s.* each. Sec. II.
Two Vases. Sec. II.
Keramics per Mintons.

FIDLER, FREDERICK, Sheffield School, 1867–84.
Designs. Metal Work. Plate. Secs. I., V., VI.
(Longdon & Co.) Metal Work. Sec. V.
See BULLAS, W.
LONGDON, H.

FIDLER, GIDEON M., Salisbury School, 1873–82.
Designs. Carpets. Metal Work and Glass. Damasks, &c. Secs. I., III., XII., XV., XVI.

FIDLER, J. B., Sheffield School, 1855–1860.
(Maw & Co.) Keramics. Plates. Jardinière. Fireplace Face. Sec. II.

FIGGINS, ELIZABETH M., Manchester School, 1873–75.
Piano front, painted on silk. Sec. XVI.
(Goodall, E., & Co.) Menu Cards, hand painted. Sec. XVIII.

FINCH, WALTER, Plymouth School, 1877–84.
School Work. Landscape, &c. Sec. I.

FINCHETT, THOMAS, Manchester School, 1877–84.
(Kendal, Milne, & Co.) Oak Seat. (Lent by John Lomax, Esq.) Sec. VIII.

FINE ART SOCIETY, 148 New Bond Street, W.
Etchings. Sec. XIX.
See SLOCOMBE, FREDERICK A.

FINNEY, VIRGINIA L., South Kensington Schools, 1882–83.
Study. Copy of an Oil Painting by Velasquez. Sec. I.

FINNIGAN, THOMAS, Dublin Metropolitan School, 1870–72.
Studies. Secs. I., XIX.

FISHER, A., Gosport School. (Halifax, 1863–65. 1873–79.)
Tapestry Design. Sec. XV.
Decoration. Sec. XVI.
Architecture. Sec. XXI.

FISHER, ALEXANDER, Torquay School, 5 years (1879–84).
(Torquay Terra Cotta Works.) Keramics.
Jardinière. Sec. II.
Studies. Sec. I.
Studies from Nature. Sec. I.
Terra Cotta Plaque. Sec. II.
(Torquay Terra Cotta Works.) Terra Cotta. Sec. II.
Keramics. Terra Cotta. Sec. II.

FISHER, ELIZABETH, Lambeth School, 1874–77.
(Doulton & Co.) Keramics. Jug. Sec. II.

FISHER, JOHN, Sheffield, 1875–83. South Kensington Schools, 7 months.
Designs for Iron Panels. Secs. I., V.
Designs. Metal Work for Grates. Secs. I., V.
Design for Plaster Panel. Sect. IX.

FITZGERALD, MICHAEL, Dublin Metropolitan School, 1868–71.
Study. Sec. I.

FLAVELLE, JULIA, Dublin Metropolitan School, 1879–84.
Design. Tiles. Secs. I., II.

FLEMING, J., & CO., Leicester. Lithographers.
See LEWITT, B. M. Sec. XVII.

FLEMING, W. R., Dundee School, 1874–80.
School Work. Machine Drawing. Sec. I.

FLETCHER, B. E., Martingford Hall, Norwich.
Wood Carving. Sec. VIII.
See MINNS, JAMES.

FLETCHER, BENJAMIN J., Coalbrookdale School, 1877–84.
(Maw & Co.) Tiles. Sec. II.

FLETCHER, JAMES, Glasgow School, 1881–84.
Premiated Designs. Secs. I., XV.
Carpets. Sec. XV.
Decoration. Sec. XVI.
Rennaissance Panel. Sec. IX.
See BROWN, JOHN.
PARK, ALEXANDER.
FERRIS, RICHARD.

FLETCHER, JOHN H., Nottingham School, 1873–84.
Cards, &c. Designs for Book Covers. Secs. I., XVII. XVIII.

FLINT, WILLIAM, Devonport School, 1879–84.
Studies. Sec. I.

FOLLIOTT, WILLIAM, Spitalfields School, 1851–57.
(D. Walters & Sons.) Furniture Silks and Brocades, 15 pieces. Curtains. Sec. XII.

FORCEY, EMILY A., Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

FORD, ALFRED, Bath, 1883–84.
Wood Carving. Sec. VIII.

FORD, RICHARD, Burslem School, 1878–81.
(Brownhill Pottery Co.) Keramics. Biscuit Box and Cruet. Vases. Sec. II.

FORD, THOMAS, & CO., Birmingham.
See MADDOX, T. W. Sec. V.

FOSTER, ARTHUR, Nottingham School, 1874–78.
(Thornley & Clarke.) Lace, 24 pieces. Sec. X.

FOSTER, FREDERICK, Worcester School, 1879–84.
Studies. Secs. I., II

FOSTER, JONATHAN, Halifax, 1877. Bradford Technical College Schools, 1883.
Designs. Mixed Fabrics. Secs. I., XIII.

FOSTER, WILLIAM, Salisbury School, 1879–84.
Design. School Work. Floor Cloth. Secs. I., XV.

FOSTER, W. G., Leeds School, 1877–84.
School Work. Freehand Drawings. Sec. I.
Christmas Cards. Sec. XVII.

FOWLER, WILLIAM THOMAS, Macclesfield School, 1876–83.
Design for Silk Hanging. Secs I., XII.

FOX, EDWIN, Birmingham School, 1855, & South Kensington School, 1865–66.
Metal Frame. Sec. V.
Lacquered Brass.
(Attendant South Kensington Museum.)

FRAMPTON, EDWARD, West London School, 1865–68, 82 Buckingham Palace Road, S.W.
(E. Frampton.) Panels of Stained Glass. Subjects: "Romeo and Juliet," "Taming of the Shrew," Renaissance Ornament. Sec. III.
Cartoons. Designs. Stained Glass. Secs. I., III.
Designs for Painted Windows, Domestic and Ecclesiastical. Secs. I., III.
Designs for Mural Paintings and Mosaic Work. Secs. I., III., XVI.
Stained Glass. Designs, various.

FRAMPTON, GEORGE J., Lambeth School, 1881–84.
Portrait Bust. Sec. II.

FREEMAN, THOMAS L., Manchester School, 1874–77.
Silver Ware. Metal Work. Domestic. Sec. V., VI.

FREEMAN & COLLIER, Princess Street, Manchester.
Metal Work.
See FREEMAN, THOMAS. Sec. V.

FRENCH, ELIZABETH, Lambeth School, 1879–82.
(Doulton & Co.) Keramics. Vase. Sec. II.

FRENCH, THOMAS, Dublin Metropolitan School, 1878–84.
Study. Bust. Sec. I.

FRIDAY, JAMES, Coventry School, 1863–75.
Studies. Designs for Watch Cases. Sec. I., VII.
(Rotherham & Sons.) Engraved Watch Cases. Sec. VII.
School Work. Sec. I.

FIRTH [or FRITH], WILLIAM S., Lambeth School; also at Gloucester and Worcester.
Designs, 2. Secs. I., IX.
Photographs. Sec. XXII.

FRITH, HENRY, Gloucester, 1861–1863.
Plaster Casts. Sec. IX.
Wood Carving. Sec. VIII.

FROST, JOHN, Coventry School, 1862–1869. 1870–73.
Studies. Design for Watch Cases. Secs. I., VII.

FRY & CO., Westmoreland Street, Dublin.
See BOYLE, JAMES. Secs. XI., I.
KAVANAGH, JOSEPH. Secs. XI., I.
KILPATRICK, W. J. Sec. XI.
RUXTON, ANNA F. Sec. XI.
THOMAS, HENRY F. Secs., XI., I.
WALSH, EDWARD. Sec. XI.

FRY, PRISCILLA A., Bristol School, 1866–84.
Studies. Designs for Fans, Tiles, Linoleum, &c. Secs. I., II., XXII.

FRY, WILLIAM A., The Salt Schools, Shipley, 1880–84.
(Armitage, Ibbotson, & Co.) Lithographs. Sec. XVII.

FURNIVAL, THOMAS, & SONS, Colridge, Stafford.
See BEAUPRÉ, C. J. Sec. II.

GALLOWAY, JAMES, Dundee School, 1877–83.
School Work. Machine Drawing. Sec. I.

GAMBLE, JAMES, Rich Terrace, South Kensington; Sheffield School, 1852–60.
Terra Cotta Decorations from Technical City and Guilds of London College, South Kensington. Secs. II., XXI.
Three Panels. Achievements of Worshipful Companies — Fishmongers, Armourers and Braziers, Goldsmiths.
Manufactured by Messrs. Gibbs & Canning, Tamworth.
Majolica Ware Garden Stool, from Bethnal Green Branch Museum. Sec. II.
Majolica Ware Dish, lent by H.R.H. the Duke of Edinburgh, K.G., K.T. Sec. II.
(S. & A. Dept.) Design for Certificate. (Lithograph, &c., Mateaux.) Sec. XIX.

GAMESON, ETHEL, Plymouth School, 1883–84.
(Brannam, H. C.) Keramics. Sec. II.

GANDY, HERBERT, Lambeth School.
Engravings on Wood. Sec. XIX.

GANDY, JESSIE, Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

GANDY, WALTER, Lambeth School, 1872–73. 1875–77.
Designs. Panel Tiles, Wall Papers. Secs. I., II., XVI.

GARBETT, NELLIE, Lambeth School, 1877–80.
(Doulton & Co.) Keramic. Vase. Sec. II.

GARBUTT, MATTHEW, West London School, 18 months.
Design. Iron Gates. Secs. I., V.

GARDNER, ANNIE ELIZABETH, Leicester School, 1880–84; Nottingham, 1878–79.
Study. Flowers. Sec. I.

GARDNER, JOHN, Coventry School, 1874–78.
Studies. School Work. Sec. I.

GARDNER, WILLIAM, Sheffield, 1872–75.
(Pawson and Brailsford.) Engraving. Sec. XIX.

GARLAND, MARY, Gloucester School, 1871–84.
Oil Painting. Sec. I.

GARRARD, R. & S., Haymarket, S.W.
See KERTLAND, GEORGE M. Sec. VI.

GARRINGTON, ARTHUR W., Bristol School, 1880–84.
Study. Shading from Cast. Sec. I.

GATER, J., South Kensington Schools, 1882–84. Newcastle-under-Lyme School, 1878–82.
Design. Silver Vase. Secs. I., VI.
Grill, wrought-iron. Secs. I., V.

GATHERCOLE, ELLEN, Lambeth School, 1882–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

GIBB, WILLIAM O., Edinburgh School, 1858–61.
(Watherston, G., & Sons.) Lithographs. Sec. XVII.

GIBB, WILLIAM, & ANDERSON, ELIZABETH F., Edinburgh School.
(Watherston, G., & Sons.) Lithographs. Sec. XVII.

GIBBONS, FRANCIS, Coalbrookdale, 1881–82. South Kensington, 1879–81. Cirencester, 1869–79.
(Allen B., Broseley.) Keramics. Platter. Plaques. Sec. II.
(S. & A. Dept.) Photograph. Design for Frieze in Plaster. Decoration. Premiated 1879 by the Plasterers' Company. Secs. IX., XVI.
(S. & A. Dept.) Photograph. Design for part of a Frieze in Plaster. Decoration. Premiated 1876 by the Plasterers' Company. Secs. IX., XVI.

GIBBONS, OWEN, Cirencester School, 1860–67. South Kensington, 1867–73.
(Maw & Co.) Keramics. Sec. II.
Model Design for Shield. Sec. I., VI.
(B. Allen.) Vase. Sec. II.

GIBBS & CANNING, Tamworth.
Terra Cotta.
See GAMBLE, JAMES. Sec. II.

GIBBS, JAMES C., Worcester School, 1874–84.
Design. Encaustic Tiles, &c. Secs. I., II.

GIBSON, EDWARD, Dublin Metropolitan School, 1867–77.
Copies. Figures. Secs. I., VI.

GIBSON, HENRY, South Kensington Schools.
Designs for Cretonnes. Sec. XIV.

GILBERT, HENRY, East Herts, Hertford, 1883–84.
Inlaid Table Tops. Sec. VIII.
Carved Wood Plate. Sec. VIII.
Carved Oak Alms Dish. Sec. VIII.
Inlaid Wood Alms Dish. Sec. VIII.
Inlaid Wood Cabinet. Sec. VIII.

GILLOW & CO., 406 Oxford Street, W.
See NOBLE, HENRY. Sec. XVI.
MORTON, W. SCOTT. Sec. XVI.
HAY, THOMAS W. Sec. XVI.

GINN, GERTRUDE M., Bloomsbury, Queen's Square School, 1879–84, and now at East Herts School.
Design. Sec. I.
Tiles. Sec. VIII.
Cups & Saucers. Sec. II.

GIRADOT, LUCY S., Farnham, 1880–1883.
Wood Carvings. Sec. VIII.

GLANVILL, G., & CO., Crown Works, Blackfriars.
See ADAMS, ROBERT H. Sec. XXII.

GLASGOW SCHOOL (SIMMONDS, T. C., Master). Voucher Reg. No. 4882. (No names given).
School Work. Sec. I.

GLASSBY, ROBERT, Sheffield.
Stone Carving. Sec. IX.

GOLDSACK, LILIAN, Lambeth School, 1883–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

GOOCH, ANNIE G. S., Bristol School, 1881–84.
School Work. Drawings from Casts. Sec. I.

GOODALL, E., & CO., Manchester.
See DEWSON, THOMAS. Sec. VIII.
FIGGINS, ELIZABETH. Sec. XVIII.

GOODFELLOW, ANNIE, Dorchester School, 1880–84.
School Work. Sec. I.

GOODWIN, ADA, Derby Central School, 1875–81.
Collective Exhibit. Sec. XVIII.
See DERBY CENTRAL SCHOOL.

GOODYEAR, E., Dudley School, 1878–1884.
(Webb, T., & Sons.) Glass. Sec. III.

GOODYER, MARY HELEN, Nottingham School, 1875–84.
Designs. Lace Curtains. Secs. I., X.

GRAHAM, DELIA, Dublin Metropolitan School, 1881–84.
Study. Flowers. Sec. I.

GRANDISON, WILLIAM BAIRD, Perth School, 1884.
(Shields, Perth.) Damask Fabrics. Sec. XI.
Design. Cotton Hangings. Sec. XIV.

GRANT, MARIA LOUISA, Queen Square School, Bloomsbury, 1881–84.
Perspective Study. Sec. I.

GRANT, R., & SONS, 107 Princes Street, Edinburgh.
See BLAIR, JOHN. Sec. XVIII.
TAYLOR, MARGARET. Sec. XVIII.

GRAYSON, W., West London School, 1869–72.
Studies. Cupid and Psyche. Sec. I.

GREEN, ALBERTA L., Lambeth School, 1879–83.
(Doulton & Co.) Keramics. Vase. Sec. II.

GREEN, J. S., Coventry School, 1850–1852. 1860–63.
(Cash, J. and J.) Fabrics. Silk. Sec. XII.

GREEN, W., & SONS, Kidderminster.
See MORRISON, P. Sec. XV.

GREGORY, THOMSON, & CO., Kilmarnock.
See THOMSON, JOHN. Sec. XV.
See TANNAHILL, W. Sec. XV.

GREY, JANE WILLIS, St. Martin's School, 3 years.
(Hildesheimer and Falkner.) Christmas Cards. Sec. XVII.

GRIBBLE, HERBERT A., South Kensington, 1866–69; & Plymouth Schools, 1862–66, 10 Sydney Street, Fulham Road, S.W.
Architecture. Four Drawings of the new Roman Catholic Church, The Oratory, Brompton. Design for a Roman Catholic Cathedral. Sec. XXI.

GRIGGS, W., Elm House, Hanover Street, Peckham, London, S.E.
Chromo-lithographs.
See VARLEY, EMILY L. Sec. XVII.
YOUNG, LILIAN. Sec. XVII.

GRIMSHAW, HUGH, Macclesfield School, 1879–82.
2 Designs for Silk Handkerchief. Secs. I., XII.

GROOME, ALICE, Lambeth School, 1877–80; & South Kensington.
(Doulton & Co) Keramics. Jug. Sec. II.

GRUBB, ALEXANDER G., Dundee School, 1868–72. 1875–81.
School Work. Architecture. Secs. I., XXI.

GUEST, Agnes Winifrede, Queen Square School, Bloomsbury, 1881–83.
Study from Nature. Sec. I.

GULLAND, ELIZABETH, Edinburgh School, 1873–77.
School Work. Study of Head. Sec. I.
Book Covers, &c. Sec. XVI.
(Constable, T. A., & Co.) Ornamental Stationery. Sec. XXII.

GUMMER, OAKLEY, Salisbury School, 1873–75.
School Studies. Secs. I., II.

GURNER, H. THORNTON, West London School, 1882–84.
Designs. Decoration and Furniture. Secs. I., VIII., XVI.

HADDON, ARTHUR F., Dublin Metropolitan School, 1882–83.
Study. "Ajax." Sec. I.

HADFIELD, JOHN JAMES, Macclesfield School, 1879–84.
Design for Silk Hanging. Secs. I., XII.

HADLEY, HOWARD, Worcester School, 1879–84.
Designs. Panels, Plates, &c. Keramics. Secs. I., II.

HADLEY, JAMES (& OTHERS), Worcester, 1851–62.
(Royal Porcelain Works.) Porcelain. Sec. II.

HADLEY, LOUIS, Worcester School, 1881–84.
Designs. Vases. Sec. I.

HAGUE, T., & CO., Sheffield.
See THOMSOM, SAMUEL. Sec. V.

HAITÉ, GEORGE C., Croydon, 1873.
(Cowlishaw, Nicol, & Co.) Satin Damask. Sec. XII.
(Woollams) Paperhangings. Sec. XVI.
Wall Paper. Stained Glass, Decorations, Illuminations. Engravings. Secs. III., XVI., XVIII., XIX.

HALIDAY, THOMAS, Edinburgh School.
See HOLIDAY, THOMAS. Sec. VI.

HALL, MARY, West London School, 1881–84.
Studies. Sec. I.

HALL, MRS., Lambeth School.
(Doulton & Co.) Decorative Tiles. "Lilies." Sec. II.

HALL, THOMAS, JUNR., Edinburgh School, 1871–74.
(Woollams) Paperhangings. Sec. XVI.

HALL, P., South Kensington Schools, 1882–84. Durham School, 1876–82.
Design. Inlaid Table Top, wood. Secs. I., VIII.
Clock Case. Sec. VI.
Architectural Drawing. Sec. XXI.

HALLAM, JESSIE (MRS. HUBBAH), Exeter School, 1866–78.
Lace, Designs for. Secs. I., X.
See HUBBAH, MRS.

HALLAM, RICHARD, Newcastle, 1881–84.
Floorcloth. Sec. XIV.

HALLORAN, HARRIETT, Plymouth School, 1883–84.
(Brannam, H. C.) Keramics. Sec. II.

HAM, ADA, Queen Square School, Bloomsbury, 1877–84.
Study from the flat. Sec. I.

HAMEL & WRIGHT, Nottingham.
See JENNINGS ARTHUR. Sec. X.

HAMILTON, CRICHTON, & CO., Edinburgh.
Design. Silver Work. Salver.
See MENZIES, JAMES.

HAMILTON, HILL, & CO., Linen Hall Street, Belfast.
Damasks. Sec. XI.
See MACKENZIE, J. G.

HAMMOND, EDWARD, West London School, 1881–84.
Studies and Designs, various. Secs. I., II., III., XVI.

HAMMOND, EDWARD, West London School, 1881–84.
(Campbell, Smith, and Campbell.) Designs for Glass Windows. Sec. III.

HAMMOND, ELI, Stourbridge School, 1883–84.
(Stevens & Williams.) Personal. Glass. Sec. III.

HAMMOND, C. M. D., Lambeth School.
Chalk Studies. "Heads." Sec. I.

HAMMOND, MARIA THEKLA, Queen Square School, Bloomsbury, 1881–84.
Study. Sciography. Stage E. 1. Sec. I.

HAMMOND, THOMAS W., Nottingham School, 1869–78. 1881–82.
Three Designs, Lace Curtains and Shawl. Sec. I.
Two Designs, Lace Curtains. Sec. X.
(M. Jacoby & Co.) Lace curtains, machine made. Sec. X.

HANCOCK, FREDERICK, Burslem School, 1879.
(Doulton & Co.) Table Sets, Porcelain. Assisted by Mr. John Slater. Sec. II.

HANCOCK, ISABEL, Queen Square School, Bloomsbury, 1869–76.
Study, flowers, in oils Sec. I.
(Lent by the Duchess of Edinburgh.)

HANCOCK, W. R. S., Nottingham School, 1870–76.
Designs. Lace Curtains. Secs. I., X.
(M. Jacoby & Co.) Lace Curtains, Machine made. Sec. X.

HANLON, HARETTA, Dublin Metropolitan School, 1869–74.
Studies. Carpets. Metal Work, &c. Secs. I., V., XI., XV.

HARDGRAVE, C., York School, and South Kensington Schools, 1869–70.
Design for Stained Glass Window. Secs. I., III.

HARDING, MORTIMER, Salisbury School, 1880–84.
Designs. Carpets. Lace. Damasks. Iron Gates. Secs. I., V., X., XI., XV.

HARDY, WILLIAM, Nottingham School, 1878–83.
Two Designs. Lace Curtains. Secs. I., X.
Design, Lace Set. Sec. X.

HARE, GEORGE., Limerick School, 1875–77. South Kensington, 1877–1884.
School Study from Life. Sec. I.

HAREY, SARAH M., Lambeth School, 1878–81.
(Doulton & Co.) Keramics. Vase. Sec. II.

HARMAN, ALBERT, Hastings & St. Leonards, 1882–84.
Architecture. Sec. XXI.

HARPER, FREDERICK, Birmingham School, 1879–82.
(Elkington & Co.) Silver and Electro Metal Work. Sec. VI.

HARRIS, GEORGE, Kidderminster School, 1882–84.
Designs. Carpets, Technical Designs for. (Assisted by William Tucker, Head Master.) Secs. I., XV.

HARRIS, HENRY C., Cardiff School, 1868–75.
Architectural Designs. Sec. XXI

HARRISON, C., Stourport.
See PARK, J. H., Kidderminster. Sec. XV.
DUCK, D., Kidderminster. Sec. XV.

HARRISON, JOSEPH, Nottingham School, 1867–69.
Designs. Silk. Secs. I., XII.
Designs. Chintzes. Secs. I., XII.

HARSMAN, FRANCIS, Leeds School, 1870–84.
Designs. Decorations. Secs. I., XVI.
Screen. Sec. VIII.

HART, HARRY, The Salt Schools, Shipley, 1882–84.
(Bradford Art Needlework Society.) Tapestries. Sec. XV.

HARTLEY, STEPHEN, Burslem School, 1882–84.
(Bodley & Co.) Keramics. Sec. II.
Coffee and Tea Pot. Biscuit Box.

HARTSHORN, JAMES E., Coalbrookdale School, 1859.
(Allen, B., Broseley.) Keramic Enamels. Sec. II.

HARVEY, HENRY, South Kensington School, 1876–79.
Model Design for an Alms Dish. Secs. I., VI.
(*Premiated by Goldsmiths' Company*, 1880.)

HARVEY, J. K., Kidderminster, and Somerset House School, London.
(Morton & Sons.) Personal. Carpets. Sec. XV.

HAUGHTON, LIZZIE, Lambeth School, 1877–80.
(Doulton & Co.) Keramics. Vase, Impasto ware. Sec. II.

HAWARD, JAMES AUGUSTUS, Northgate, Darlington.
See HAWARD, SIDNEY. Sec. VIII.

HAWARD, SIDNEY, South Kensington School, 1875.
(J. A. Haward.) Cabinet. Sec. VIII.

HAWKINS, JOHN, Plymouth School, 1876–81.
(St. Louis, America) Lithographs. Executed for W. Spence Bate, F.R.S. (Breadon & Sons, Plymouth). Sec. XVII.

HAWKSLEY, EMILY, Lambeth School, 1879–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

HAWTHORNE, RICHARD, York, 1883–84.
Stained Glass. St. George and Dragon. Sec. III.

HAY, THOMAS WALLACE, Edinburgh School, 1857–59.
(Gillow & Co.) Panels and Frieze, Decoration. Sec. XVI.
(Cowlishaw, Nicol, & Co.) (Dumet, M., Paris.) Silk Damask. Sec. XII.
(Duff & Co.) (Gillow & Co.) Wall Papers. Sec. XVI.
(Woollams) (Dumet, Paris) Wall Papers. Sec. XVI.

HAYS, ANNA, Lambeth, 1 year; & St. Martin's Schools, 3 months.
(Doulton & Co.) Keramics. Tobacco Jar. Sec. II.

HAYES, ELLEN, Cork, Ursuline Convent Industrial School.
(Meade, Eliza.) 2 Designs and 3 Specimens; Irish Crochet. Sec. X.

HAYLEY, JANET M. B., West London School, 1879–84.
Studies. Oil Colour Group. Sec. I.

HEALD, FRANCIS, Nottingham School, 1869–71.
Designs. Lace Curtains. Secs. I., X.

HEARE, GERTRUDE.
See ELLIS, MRS. T. S. Sec. I.

HEATH, ERNEST D., West London School, 1880–84.
Studies. Chalk Study. Sec. I.

HEATH, MARGARET A., Gloucester, 1877–83.
School Work. Architecture. Secs. I., X.

HEISE, EMILY S., Birkenhead, 1877–1881; Tranmere, 1881–84.
Designs. Lace. Flounces. Secs. I., X.
Studies. Sec. I.

HELBRONNER, R., Oxford Street, W.
See ROWLEY, J. Sec. XII.

HENDERSON & CO., Durham.
See CHAMBERS, MICAH. Sec. XV.

HENDERSON, JAMES, Dundee School, 1876–81.
School Work. Engineering Drawing. Tunnel 23A. Sec. I.

HENK, JOHN, Stoke-on-Trent and Fenton School, 1863–74.
Flower Holder (Stand), £11. Sec. II.
Japanese Boat, £6. 6*s*. Sec. II.
Vase, 37*s*. 6*d*. Sec. II.
Two Cupids and Shells, 26*s*. 6*d*. each. Sec. II.
One Majolica Jardinière, £8 14. Sec. II.
Keramics per Minton's Reg. Voucher, No. 3541, 9 April, 1884.

HENN, MARION RYDER, Queen Square School, Bloomsbury, 1880–84.
Design. Oil Cloth. Secs. I., XXII.

HENNEY, G. F., South Kensington Schools, 1883–84. Birmingham School, 1879–83.
Designs. Various. Sec. I.
Vase in Earthenware. Secs. I., II.
Terra Cotta Column. Secs. I., II.
Grill, wrought-iron. Secs. I., V.
Gates, wrought-iron. Secs. I., V.
Electric Light Pendant. Secs. I., V.

HENTON, GEORGE M., Leicester School, 1872–84.
Landscapes. Sec. I.
Designs. Secs. I., II.

HEPBURN, ISABELLA, West London School, 1870–72.
Studies. Botanical. Sec. I.

HEPBURN, MARY, West London School, 1873–77.
Studies. Botanical. Sec. I.

HER MAJESTY THE QUEEN.
Chalk Drawing. Head from Life. Lent by Her Majesty.
See LOVERING, IDA. Sec. I.

HER ROYAL HIGHNESS THE PRINCESS OF WALES.
Jewelled Bouquet Holder.
Jewelled Chatelaine.
Silver Spade, ivory-mounted handle.
See TONKS, JOSEPH W. Secs. VI., VII.

HERON, JAMES, Edinburgh School, 1861–65. 1872–78.
School Work. Design. Chimney Mantel. Secs. I., VIII.

HEWITT, A. E., South Kensington Schools, 1883–84. Birmingham School, 1871–83.
Design. Clock Case. Secs. I., V.

HEWITT, J. P., Stoke-on-Trent School, 1872–73.
(Mintons) Keramics. Panel. Sec. II.
(Minton Hollins) Keramics. Tile Panel. Sec. II.
Tile Panel. Sec. II.
Keramics. Panel of Tiles. Sec. II.

HEYMANN & ALEXANDER, Nottingham.
See COATES WILLIAM. Sec. X.
JONES, LOUIS. Sec. X.
OSCROFT, SAMUEL. Sec. X.

HERAPATH, ALICE M., Lambeth School, 1880–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

HIGHET, KATE, Kilmarnock School, 1881–84.
School Work. Landscape. Oil. Sec. I.

HILDESHEIMER & FAULKNER, Jewin Street, E.C.
See DUNDAS, JAMES. Sec. XVII.
GREY, JANE W. Sec. XVII.
PAGE, HALL. Sec. XVII.
PAGE, H. M. Sec. XVII.

HILDESHEIMER & FAULKNER, Jewin Street, E.C.
See MANLY, ELEANOR. Sec. XVII.
MUCKLEY, W. J.
MUCKLEY, W. R.
MUCKLEY, A. FAIRFAX
} Collective, Sec. XVII.

HILL, E., Sheffield School, 1852–60.
Silver Work. Sec. VI.

HILL, GEORGE L., Bristol School, 1879–84.
School Work. Drawing from Antique. Sec. I.

HILL, HENRY, Boston School, 1865–1875.
Designs. Porcelain. Sec. I., II.

HILL, JAMES, Stourbridge, 1864–81.
(Stevens & Williams.) Glass. Sec. III.
3 Designs. Lace. Sec. X.

HILL, MARGARET M., Cork, 1860–73.
Porcelain Tiles. Panel. Sec. II.

HILL, WILLIAM, Stourbridge School, 1868–69.
(Webb & Sons.) Glass Ware. Sec. III.

HILLS, MARY ANN, West London School, 1876–84.
Studies. Fans. Secs. I., VII.

HINCHCLIFFE, JAMES E., Coventry School, 1880–84.
Studies. Sec. I.

HINCHLIFF, JESSIE, Lambeth Schools, and City & Guilds Institute, 1880–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

HINXMAN, ELLEN M., Salisbury School, 1880–83.
School Work. Flower Painting. Sec. I.

HISLOPP, MARGARET E., Edinburgh School, 1873–75.
Decoration, Wall Paper. Sec. XVI.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.
Gold Key. Gothic Design.
See Tonks, Joseph, W. Sec. VII.
Casket.
See Wilson, T. W.

HITCHENS, ALFRED, South Kensington Schools, 5 years.
Studies. Paintings from Life. Sec. I

HOBBS, SAMUEL, Long Acre, W., 1877–79. Young Men's Christian Institute.
Metal Work. Sec. V.

HODDER, MRS. CHARLOTTE, Worcester School, 1874–84.
Studies. Chalk and Oil. Sec. I.

HODGETTS, JOSHUA, Stourbridge School, 1871–72.
(Webb & Sons.) Glass Ware. Sec. III.

HODGKINSON, WILLIAM, Stoke-on-Trent and Fenton School, 1872–84.
Two Jars, 94*s.* 6*d.* each. Sec. II.
One Jar, 110*s.* each. Sec. II.
One Dessert Plate, 37*s.* each. Sec. II.
One Dessert Plate, 25*s.* each. Sec. II.
One Dessert Plate, 25*s.* each. Sec. II.
One 1855 set, £9 the set. Sec. II.
Keramics per Minton's Reg. Voucher, No. 3541, 9 April, 1884.

HODKINSON, HENRY, Coventry Art Metal Works, Coventry.
See Hodkinson, Henry Pratt. Sec. V.

HODKINSON, HENRY PRATT, Coventry School, 1866–67. 1872–75.
Metal Work. (H. Hodkinson, Coventry Art Works.) Sec. V.

HOGG, H. W., Derby, 1872–81.
Collective Exhibit. Sec. XVIII.
See Derby Central School.
Designs and School Work. Secs. I., VI.

HOGGINS, J., Macclesfield School, 1875–79. 1881–84.
(Nicholson, J. O.) Fabrics. Secs. XII., XXII.
Designs for Silk Embroidery. Secs. I., XI.

HOGGINS, JAMES, Macclesfield Embroidery School.
(J. O. Nicholson.) Collective Exhibit.
Silk Fabrics. Secs. XII., XXII.
See Nicholson, J. O.

HOLGATE, J., Halifax School, 1866–1877.
Designs. Axminster Carpet and Rug. Secs. I., XV.

HOLGATE, JOSEPH, Westminster School.
(F. Walton & Co.) Decoration. Sec. XVI.

HOLIDAY, THOMAS, Edinburgh School, 1847–54.
(Mackay & Chisholm.) Table Silver Plate. Sec. VI.

HOLLAND & SONS, Mount Street, W.
Carved Wood Cabinet. Sec. VIII.
See Wallace, Sir Richard, Bart.
Allwright, William Sec. VIII.

HOLLAND, MICHAEL, Cork, 1874–1876. 1879–80.
Six pieces Irish Crochet Work. Sec. X.
Design for Crochet Work. Sec. X.

HOLLINS, MINTON & SONS, Tile Works, Stoke-on-Trent.
Keramics. Sec. II.
See Bradley, Sarah, A. Sec. II.
Buxton, S. Sec. II.
Dixon, W. H. Sec. II.
Hewitt, J. P. Sec. II.
Simpson, W. Sec. II.
Slater, A. Sec. II.
Wright, A. Sec. II.

HOLLIS, BENJAMIN, Dudley School, 1873–74.
(T. Webb & Sons.) Glass Ware. Sec. III.

HOLLIS, ELIZA, Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Jug. Sec. II.

HOLMES, ELLEN, Bristol School, 1878–83.
School Work. Bigonia. Oil Colour. Sec. I.

HOLMES, ETHEL, West London School, 1877–84.
Studies. Chalk. Sec. I.

HOLMES, GEORGE H., Nottingham School, 1875. 1880–84.
Designs. Lace Set and Wall Papers. Secs. I., X., XVI.

HOLMES, MARY, Great Yarmouth School, 1869–84.
Designs. Cups and Saucers. Secs. I., II.
Muslins. Sec. XIII.
A Fan. Sec. VII.

HOLMES, RHODA CARLETON, Queen Square School, Bloomsbury, 1874–78.
Study. Head in Chalk. Sec. I.

HOLT, MISS J. C., Royal Albert Hall School.
Wood Carving. Sec. VIII.

HOLTZENDORF, COUNT, Derby Central School, 1876–81.
Collective Exhibit. Sec. XVIII.
See DERBY CENTRAL SCHOOL.

HOMAN, GERTRUDE, West London School, 1880–83.
Studies. Group in Oil. Monochrome. Sec. I.

HOOD, HENRY, Nottingham School, 1859–75.
Design, Lace Shawl. Secs. I., X.
(Zuber & Co.) Wall Papers. ? Design. Sec. XVI.

HORNE, AGNES, Lambeth School, 1880–83.
(Doulton & Co.) Keramics. Bowl. Sec. II.

HORSFIELD, HENRY, Nottingham School, 1872–79.
Design, Lace Shawl. Secs. I., X.

HORSMAN, FRANCIS, Leeds School.
Four-fold Wood Screen. Painted Tapestry. Sec. VIII.
(Made by himself.)

HOSBAND, HENRY, Burslem School, 1874–84.
(Bodley & Co.) Keramics. Sec. II.

HOSKYN, MARY, West London School, 1876–78.
Studies. Ornament. Sec. I.

HOUSEHAM, J., Sleaford School, 1876–77.
Study. Botanical Outline. Sec. I.

HOW, ALICE, Dorchester School, 1875–84.
School Work. Flowers. Still Life. Sec. I.

HOWARD, CHARLES T., Boston School, 1876–84.
Studies, water-colour. Sec. I.

HOWARD & SONS, Newman Street, London, W.C.
See RANDALL, W. F. Sec. VIII.

HOWELL, WILLIAM, Cardiff School, 1880–84.
(Owen, Daniel, & Co.) Chromolithos. Sec. XVII.

HOWITT, AGNES, Sheffield School, 1881–84.
Carved Wood Box. Sec. VIII.

HOYLE, THOMAS, & SONS, Manchester.
Printed Cotton Fabrics.
See WATERHOUSE, JOSEPH. Sec. XIV.

H.R.H. THE DUKE OF EDINBURGH, K.G. K.I.
Majolica Ware Dish.
See GAMBLE, JAMES. Sec. II.

HUBBAH, MRS., Exeter School, 1866–1878.
Design. Lace, Honiton. Secs. I., X.

HUDDERSFIELD TECHNICAL SCHOOL AND MECHANICS' INSTITUTE.
See MOODY, EDWARD. Sec. VIII.

HUGHES, KATHARINE M., Lambeth School, 1882–83.
(Doulton & Co.) Keramics. Vase. Sec. II.

HUGHES, HELEN, Dublin Metropolitan School, 1880–84.
Designs. Tiles. Secs. I., II.

HUGHES, ELLEN, Ursuline Convent, Cork.
Irish Crochet. 2 designs, 3 Specimens. Sec. X.

HUGHES, JOHN, Dublin Metropolitan School, 1876–84.
Studies. Casts. Sec. I.

HUGHES, JOHN, Burslem, 1875–80.
(Brownhill Pottery Co.) Keramics.
Tea Set and Tray Mounts of Silver.
Salad Bowl. Sec. II.

HULME, F. EDWARD, South Kensington School, 1857–63.
16 Books. Guides to Art. Sec. XXII.

HUMPHRIES, C., South Kensington Schools, 1874–75.
Study. Tempera Painting, from Nature. Sec. I.

HUNT & ROSKELL, New Bond Street, London.
Silver Ornamental Table Plate.
See CARTER, G. A. Secs. V., VI.
BROWN, T. SWAFFIELD. Sec. VI.
CRACKNELL, ELLEN K. Secs. I., III., VI.

HUNTER, DAVID, Kilmarnock School, 1879–84.
School Work. Outline, &c. Sec. I.

HUNTER, JAMES B., Edinburgh School, 1872–73. 1876-84.
School Work. Still Life. Water-colour. Sec. I.

HUNTSMAN, ALICE M., West London School, 1874–82. 1883–84.
Studies. Ornament. Sec. I.

HUNTSMAN, FLORENCE S., West London School, 1874–84.
Studies. Sec. I.

HUSSEY, J. S., Kidderminster School, 1870–1883.
Designs. Carpets. Secs. I., XV.

HUTH, FREDERICK, Edinburgh School, 1877–83.
Lithographs. Sec. XVII.

HUTTON, J. S. P., Sleaford School, 1876–80.
Drawing. Horseradish. Sec. I.

HYDES, ROBERT, Sheffield, 1875–78.
(Pawson & Brailsford) Etchings, &c. Sec. XIX.

HYTCHE, KEZIA, West London School, 1878–84.
Study. Sec. I.

ILLSTON, G. A., Rotherham, 1858–76.
(Corbitt, W., & Co.) Metal Work. Sec. V.

ILLSTON, G., Sheffield School, 1851–1869.
Design. Furniture. Metal Work. Secs. I., V., VIII.

INCHBOLD, EDWARD S., West London School, 1882–84.
Studies. Sec. I.

INGALL, J. S., Barnsley, 1874–82.
(Richardson & Co.) Damasks. Sec. XI.

INGOLDBY, MARY E., Sleaford School, 1878–81.
Drawing. Outline. Sec. I.

IRELIVING, SAMUEL, Devonport School, 1875–84.
Studies. Groups. Sepia. Sec. I.

IRWIN, ELIZABETH, Dublin Metropolitan School, 1865–76.
Designs. Damasks, Lace, Carpets. Furniture Fabrics. Secs. X., XI., XII., XV.
Study. Sec. I.

IRWIN, MARCELLA, Dublin Metropolitan School, 1865–76.
Designs. Damasks, Muslin, Carpets, Lace. Secs. I., X., XI., XIV.
Study. Still Life Group. Sec. I.

IRWIN, MARIA L.
See URWIN.

JACKSON, FRANCES, Bristol School, 1880–84.
Studies, from casts, in Sepia. Sec. I.

JACKSON, FRANK G., Birmingham School, 1848–52. 1854–60.
(Elkington & Co.) Electro Silver Plate. Sec. VI.
Enamels. Sec. VI.

JACOB, ALICE, Dublin Metropolitan School, 1879–84.
Studies. Head, in chalk. Sec. I.

JACOB, ELLA, Salisbury School, 1879–84.
Keramics. Salisbury Ware. Sec. II.
Design. Table Top. Sec. VIII.
(Designed and manufactured by herself.)

JACOBY, M., & CO., Nottingham.
See HAMMOND, T. W. Sec. X.
HANCOCK, W. R. S. Sec. X.
STAYNES, F. J. Sec. X.
CUTTS, JOHN. Sec. X.
ATKEY, C. I. Sec. X.

JAMES, CHARLOTTE, Queen Square School, Bloomsbury, 1860–63.
(Tuck, R., & Sons.)
Christmas Cards. Sec. XVII.
Designs, Wall Papers. Sec. XVI.
Design, Frieze. Secs. I., XVI.

JAQUES, LILIAN A., Leeds School, 1881–84.
Design. Group, in water colour. Sec. I.

JARRATT, EDWIN, Coalbrookdale School, 1876–84.
Designs. Silver Work. Secs. I., VI.
Tile Panel, &c. Mosaic. Sec. II.

JEFFREY & CO., Essex Road, N.
See NOBLE, HENRY. Sec. XVI.
RAMSEY, ALLAN. Sec. XVI.
TRACEY, AGNES. Sec. XVI.
MORTON, J. SCOTT. Sec. XVI.
HAY, THOMAS W. Sec. XVI.
MUCKLEY, W. J. Sec. XVI.

JEFFREY, JOHN G., Coalbrookdale School, 1881–84.
Design. Tile Panel. Secs. I., II.

JENKINSON, THOMAS, Manchester School, 1868–70.
(Edmundson, R. B., & Son.) Stained Glass. Sec. III.

JENNINGS, ARTHUR, Nottingham School, 1874–78.
(Hamel & Wright.) 2 Lace Curtains. Sec. X.

JEROME, CHARLES, Gosport School, 1875–1877. 1880–84.
School Work. Decoration. Secs. I., XVI.

JESSOP, CHARLES H., Sheffield, 8¼ years, and Derby School, 7¼ years.
Metal Work. Sec. V.
Decorative Panels. Cast Iron, Cast Brass, and Pewter. (Designed and executed by C. H. Jessop.) Sec. V.

JESSOP, F. C., Rotherham School, 1873–84.
Designs. Wrought-iron Gates. Secs. I., V.
(Perrot & Habershon.) Stoves, etc. Sec. V.

JOCKEL, CHARLES A., Edinburgh School, 1861–69.
(Jockel & Co.) Hangings. Sec. XV.
Decoration. Sec. XVI.

JOCKEL, CHRISTIAN, & CO., Edinburgh.
See JOCKEL, CHARLES A. Secs. XV., XVI.

JOHNSON, HERBERT, St. Martin's School, W.C., 2½ years.
Drawings for Woodcuts and Etchings for "Graphic." Sec. XIX.

JOHNSON, WILLIAM, Stoke-on-Trent School, 1876–78.
(Doulton & Co.) Vases. Porcelain. Assisted by Mr. John Slater. Sec. II.

JOHNSTON, MATILDA, Dublin Metropolitan School, 1881–84.
Design. Inlay Work. Secs. I., VIII.

JOHNSTONE, WILLIAM, Edinburgh, Coachbuilder.
See JOHNSTONE, WILLIAM. Sec. XXII.

JOHNSTONE, WILLIAM, Stirling School (The High School), 1872–73.
(W. Johnstone) Photograph of a Hansom Cab. Sec. XXII.

JONES, HELEN P., Gloucester School, 1862–84.
Painting on Silk, for fan. Secs. I., VII.

JONES, H. OVERTON, South Kensington Schools, 1876–1878.
(Jones, G., & Sons) Keramics. Table Ware. Sec. II.

JONES, G., & SONS, Trent Pottery, Stoke-on-Trent.
(G. Jones & Sons.) Keramics. Table Ware. Ewers and Basins, Cups, Saucers, and Plates, and the like.
See JONES, H. O. Sec. II.

JONES, JANE G., Dublin Metropolitan School, 1873–78.
Design. School Work. Sec. I.

JONES, JEANNIE, Dublin Metropolitan School, 1873–77.
Study. Oil Painting. Sec. I.

JONES, LOUIS, Nottingham School, 1878–84.
(Heymann & Alexander.) Window Blinds and Curtains. Lace. Sec. X.

JONES, WILLIAM, Manchester School, 1858–76.
(Oliver & Atcherley.) Damask. Sec. XI.
Decoration. Sec. XVI.
(Cowlishaw, Nicol, & Co.) Carpets, Tapestry. Sec. XV.

JOSEPH, ADA M., Derby Central School, 1875–81.
Collective Exhibit. Sec. XVIII.
See DERBY CENTRAL SCHOOL.

JORDAN, FRANCES LYDIA, Dublin Metropolitan School, 1867–81.
Four designs. Muslins. Sec. XIV.
(Pym Brothers.) Damasks. Sec. XI.
Designs. Lace Flounce. Secs. I., X.

JOYCE, MARY, Dover School, 1872–1884.
2 Designs. Honiton Lace. Secs. I., X.

JULIAN, MARY, Plymouth School, 1883–84.
(Brannam, H. C.) Keramics. Sec. II.

JUNCK, OSCAR A., West London School, 1870–76.
Studies. Modelling. Secs. I., V., IX.

JUPP, G., St. Martin's School, W.C., 5 or 6 years.
Design. Plaster Frieze. Secs. I., XXI.
Casts so broken; withdrawn. Per J. Parker, Master, St. Martin's School.

KAVANAGH, JOSEPH, Dublin Metropolitan School, 1869–77.
Design. Sec. I.
(Fry & Co.) Damasks and Tapestry. Secs. XI., XII.

KEEN, ROSA, Lambeth School, 1877–1880.
Impasto Ware.
(Doulton & Co.) Keramics. Vase. Sec. II.

KEEVIL, FRANK, Bath, 1871–72.
Wood Carving. Sec. VIII.

KELLETT, ANNA, Dublin Metropolitan School, 1869–75.
Design. Decoration. Secs. I., XVI.

KELLY, SAMUEL, Torquay School, 1876–79. 1881–84.
Study of Drapery. Oil. Sec. I.

KELSALL, A. R., Burslem School, 1882–84.
(Doulton & Co.) Keramics. Plates. Sec. II.

KENDAL, MILNE, & CO., Manchester.
See FINCHETT, THOMAS. Sec. VIII.

KENNAWAY, CHARLES G., JUN., Dundee School, 1881–84.
School Work. Machine Drawing. Sec. I.

KERR, ELEANOR, Dublin Metropolitan School, 1880–84.
Designs. Decoration, Muslin, &c. Secs. I., XIV., XVI.

KERR, THOMAS, Macclesfield School, 1877–84.
Design for Silk Handkerchief. Secs. I., XII.
(Birchenough & Co.) Brocaded Silk. Sec. XII.

KERSHAW, JOSEPH, Coalbrookdale, 1856–59.
(Coalbrookdale Iron Co.) Metal Work. Sec. V.

KERTLAND, GEORGE M., Birmingham, 1864–74.
(Garrard, R. & S.) Silver Work. Sec. VI.

KILPATRICK, W. J., Dublin Metropolitan School, 1865–73.
(Fry & Co.) Damasks. Sec. XI.

KING, ADELINE, Salisbury School, 1871–84.
Designs. Lace. Secs. I., X.

KING, DUNCAN, Edinburgh School, 1875–83.
(Morton, W., Scott, & Co.) Drawing of an actual Sideboard. Sec. XXII.

KING, HARRY, Nottingham School, 1878–84.
Designs. Wall Papers. Secs. I., XVI.

KING, HENRY J., Lambeth School, 1883–84.
Decoration Panel. Sec. XVI.

KING, LYDIA BACON, Queen Square School, Bloomsbury, 1881-84.
Fan—Silk, per Rimmel. Sec. VII.
Study of Roses, &c. Sec. I.

KINGDON, MAUD J., Exeter School. 1875–84.
Lace, Designs for Collars. Secs. I., X.

KINGMAN, GEORGE, Kidderminster, 1868–70. South Kensington, 1866–1868. Bath, 1858–66.
(Dixon, H. J., & Sons.) Carpets. Sec. XV.

KINGSTON, THOMAS, Bristol School, 1880–84.
Studies. Botanical and others. Sec. I.

KINGSTON, W. J., Leeds School, 1871–1883.
Design. Wall Papers. Secs. I., XVI.
A Fan Sec. VII.

KIRBY, CORNELIUS M., West London School, 1881–84.
Design, Cabinet. Secs. I., VIII.
Decoration. Sec. XVI.

KIRK, THOMAS L., Nottingham School, 1877–80.
Design. Lace Curtains. Secs. I., X.

KIRKMAN, KATE, Lambeth School, 1879–84.
Designs. Sec. II.
Keramic Plaques. Sec. II.

KIRKWOOD, HENRY B., Edinburgh School, 1867–1870.
(Kirkwood, R. & H. B.) Silver Work. Sec. VII.
(Kirkwood, R. & H. B.) Silver Plate. Sec. VI.

KIRKWOOD, R. & H. B., Edinburgh.
See KIRKWOOD, H. B. Secs. VI., VII.

KITTRIDGE, JOHN, Newcastle-under-Lyme School, 1881–84.
Flower Holder. 9*s*. Sec. II.
Keramics, per Mintons. Voucher, Reg. No. 3541, 9th April, 1884.

KNIGHT, JOHN, Nottingham School, 1872–82.
Design for Furniture. Secs. I., VIII.

KNOWLES, DAVIDSON, West London School, 1872–81.
Architectural and other Drawings.
Engravings. Secs. XIX., XXI.

KNOWLSON, W. L., York School, 1880–84.
Reg. letter 4019, 21.iv.'84. (Cancelled.)

KNY, THEODORE, Stourbridge School, 1877–78. 1883.
(Webb & Sons.) Glass Bowls, &c. Sec. III.

KOERT, CORNELIUS VAN, West London School, 1880–84.
Studies. Chalk, Antique. Sec. I.
See VAN KOERT.

LAMB, JOHN, West London School, 1870–71.
Decoration. Sec. XVI.

LAMBERT, GEORGE F., Derby School, 1879–82. St. Martin's, W.C., 1864–66.
(The Derby Crown Porcelain Co., Derby.)
Plates, &c. Keramic Ware. Flower Vase. Sec. II.
Designs. Wall Papers. Keramics. Porcelain. Secs. I., II., XVI.

LAMBERT, G. F., Worcester School, 1874–77.
Designs. Porcelain. Secs. I., II.

LAMBERT, ISABELLA, Dublin Metropolitan School, 1864–73.
Studies. Head. Oil, Chalk. Sec. I.

LAMBERT, MRS. ROWLEY, Hampton Court Palace.
Painted Decoration. Sec. XVI.
Design for Window Curtain of Silk. (Withdrawn) Sec. XII.
See PERRY, W. Sec. I.

LANE, FREDERICK W., West London School, 1880–81.
Architecture. Sec. XXI.

LANE, JOHN QUILLER, Belfast School, 1871–73. 1876–77. 1879–81; also South Kensington, 1873–76.
Designs for Fabrics, various. Secs. I., II., XVI., XXII.
Damasks (Ferguson & Co.) Secs. XI., XII.

LANE, R. P., Glasgow School.
(S. & A. Dept.) Photograph. Decorative Panel in Plaster. Premiated 1874 by Plasterers' Company. Sec. XVI.

LANGLEY, LEONARD, Burslem School, 1874–78.
(Doulton & Co.) Bowl. Porcelain. Sec. II.
Assisted by Mr. John Slater.

LARCHER, ULRIQUE A., Lambeth School, 7 years.
(Doulton & Co.) Keramics. Vase. Sec. II.

LAWRIE, JANE, Kilmarnock School, 1878–84.
School Work. Oil Painting. Sec. I.

LAWSON, J. Sheffield School, 1874–1884.
(Watson, Moorwood, & Co.) Metal Work. Sec. V.

LAWSON, W. A., Glasgow, 1870–73.
(Barbour, Anderson, & Co.) Two Silk Curtains. Secs. XII., XV.

LEDWARD, RICHARD A., Burslem and South Kensington, 1871–79.
(Craven, Dunnill, & Co.) Tiles. Sec. II
(Malkin, Edge & Co.) Keramics. Tiles Sec. II.
(Doulton & Co.) Plaque.

LEE, ALICE, Dublin Metropolitan School, 1870–73.
Study. Head, in Chalk. Sec. I.

LEE, FRANCES E., Lambeth School, 1876–80.
(Doulton & Co.) Keramics. Vase. Sec. II.

LEE, HARRIETTE E., Lambeth School, 1877–81.
(Doulton & Co.) Keramics. Vase. Sec. II.

LEES, GEORGE, Kidderminster School, 1862–70. 1880–84.
Two Designs. Lace. Carpets. Secs. X., XV.

LEGGETT, WILLIAM J., Ipswich School, 1874–84.
Glass Decoration, Sec. III.
Painted Decoration. Sec. XVI.

LEIGHTON, F., South Kensington Schools, 1883–84. Coalbrookdale School, 1878–83.
Design. Grill, in wrought-iron. Secs. I., V.
Design. Vitreous Mosaics. Secs. I., III.
Tiles. Sec. II.
Design. Decoration. Secs. I., XVI., XIX.
Designs. Christmas Cards. Sec. XVII.
Sideboard. Sec. VIII.

LEIGHTON, SIR FREDERICK, P.R.A.
Engraving. "Industrial Art applied to War." From the cartoon in South K. Museum.
Type of Beauty, No. 6.
(Engraved on wood, C. Roberts.) Sec. XIX.

LETHEREN, C., Cheltenham, 1880. Christ Church, 1877–79. St. Marks, 1882–83.
Ornamental Cast and Wrought Iron Work. Sec. V.

LETHEREN, W. H., Cheltenham, 1880. Christ Church, 1877–79.
Iron Work. Sec. V.

LETHEREN, W., Cheltenham, 1865–1867.
Iron Work. Sec. V.

LETHEREN, W., & Sons, Cheltenham.
Ornamental Metal Work. Sec. V.
See LETHEREN, C.
LETHEREN, W. H.
LETHEREN, W.

LEVIN, VICTORIA, West London School, 1880–84.
Studies. Group, Sepia. Sec. I.

LEWIS, FLORENCE, Lambeth School, 1876–80.
(Doulton & Co.) Keramics. Vase. Sec. II.

LEWIS, ISABEL, Lambeth School, 2 years.
(Doulton & Co.) Keramics. Vase. Sec. II

LEWIS, MARY AGNES, Lambeth School, 1878–83.
Designs. Christmas Cards. Secs. I., XVII.

LEWIS, E., Lambeth School.
Doulton Ware. Doulton's Pavilion. Sec II.

LEWITT, BENJAMIN M., Leicester School, 1877–84.
(Fleming, J., & Co.) Designs. Calendar. Secs. I., XVII.
Lithographs. Sec. XVII.

LEWTY, RICHARD, Stoke-on-Trent and Fenton School, 1880–84.
Two Dessert Plates. Sec. II.
Keramics per Mintons. Voucher, Reg. No. 3541. 9th April, 1884.

LIBERTY, OCTAVIA R. H., Nottingham School, 1875–81.
Designs. Hangings. Secs. I., XII.

LILEY, HENRY G., West London School, 1870–77.
Studies. Linoleum and Decoration. Secs. I., XVI., XXII.

LILEY & WOOD, Radnor House, Gloucester Square, W.
See Beaupré, C. J. Sec. I.

LILLEY, ELIZABETH A., Lambeth School, 1878–84.
Studies. Drawing from Life. Sec. I.

LILLIE, B. A., West London School, 1877.
(Woollams.) Paperhangings. Sec. XVI.

LINNELL, THOMAS, Leicester School, 1881–84.
Design, Wall Papers. Secs. I., XVI.
Design, Tapestry. Sec. I., XV.

LINTHORPE POTTERY (J. HARRISON), Middlesboro'.
See Worth, Lucy. Sec. II.
Patey, R. W. Sec. II.
Longbottom, S. Sec. II.

LISHMAN, JAMES T., Bradford Technical College School, 1883.
Designs. Mixed Fabrics. Sec. XIII.

LITTLER, JOSEPH, Stoke-on-Trent and Fenton School, 1882–84.
Three Dessert Plates. Sec. II.
Keramics, per Mintons.

LLEWELLYN, S. H., South Kensington School.
Group in Oil Colour. Sec. I.

LLOYD, JULIANNA, West London School, 1878. 1880–82.
Studies. Decorations. Designs. Secs. I., II., VIII., XVI.

LLOYD, MARY, Dublin Metropolitan School, 1880–84.
Designs. Furniture Stuffs. Inlay Work. Secs. I., VIII., XII.

LLOYD, MARY J., Bristol School, 1872–84.
Studies. Drawings in Sepia and in chalk. Sec. I.

LOCK, EDWARD, Bath, 1880.
Circular Panel. Wood Carving. Sec. VIII.

LOCK, MARY, Dorchester, 1868–73.
School Work. Study in Chalk from Cast. Sec. I.

LOCK, MESSRS., Cabinet Works, Bristol Road, Bath.
See Ascott, John W. Sec. VIII.

LODGE, E. D., Royal Albert Hall School.
Wood Carving. Sec. VIII.

LOMAX, JOHN, Esq., Manchester.
Carved Oak Hall Seat.
See Finchett, T. Sec. VIII.

LONDON, EMILY ALICE, Lambeth School, 1880–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

LONG, NAT., Cork, 1881–84.
Carved Wood. Side-board. Sec. VIII.

LONGBOTTOM, S., Darlington, 1871–1878.
(Linthorpe Pottery Co.)
Keramics. Vases. Sec. II.

LONGDON, HENRY, Sheffield School, 1847–49.
(Longdon & Co.) Metal Work. Sec. V.
Carved wood Mantelpiece Sec. VIII.
See Bullas, W.
Fidler, F. Sec. V.

LONGDON & CO., Phœnix Foundry, Sheffield.
Metal Work. Sec. V.
See Bullas, W. Sec. V.
Fidler, F. Sec. V.
Longdon, H. Sec. V.
Sedding, J. D. Sec. V.

LONGMAN, THOMAS, Stoke-on-Trent and Fenton School, 1864–75.
One Pedestal. 23 guineas. Sec. II.
One Jardinière. 12 guineas. Sec II.
One Ewer. 94*s.* 6*d.* Sec. II.
Keramics, per Mintons. Voucher, Reg. No. 3541. 9th April, 1884.

LOVERING, IDA, Queen Square School, Bloomsbury, 1873–78.
Chalk Study. Secs. I., XIX.
(Purchased by Her Majesty the Queen, and lent by Her Majesty.)

LOW, MARIE A., Bloomsbury School, 1871.
Lithographs. Christmas and other Cards. Sec. XVII.

LOXLEY, RICHARD, Sheffield, 1878–1884.
(Pawson & Brailsford.) Engravings. Sec. XIX.

LUNN, RICHARD, Sheffield School, 1857–66. (South Kensington, 1866–1868.) (Assisted by J. Platts, C. Rouse, and J. Rouse.)
(Derby Crown Porcelain & Pottery Co.)
Keramic Ware, silver mounted.
Tankards and Cups. Secs. II., VI.
Dessert Service, W. E. G., 1883. Sec. II.
(Derby Crown Porcelain Co., Rhodes & Barber.) Dinner Plates and Dishes.
Designs. Porcelain. Silver Plate. Secs. I., II., VI.
Boudoir Mantel-set; Porcelain Clock, Candlesticks, 4 Flower Vases. Sec. II. Lent by Sir P. C. Owen, K.C.M.G., C.B., C.I.E.

LUPTON, E. D., MISS, Lambeth School, 1875–84.
Design. Tiles for Dado. Secs. I., II.
(Doulton & Co.) Keramics. Vase. Sec. II.

LYNDON, HERBERT, West London School, 1871–76.
Studies. Playing-card Backs. Secs. I., XVII.
Six Specimens Playing Card Backs. Sec. XXII.

McALPINE, JOHN, Edinburgh School, 1880–83.
(Morton, W. Scott, & Co.) Drawing, Copy of Design for a Cabinet. Sec. XXII.

MACARTHUR, BLANCHE, Queen Square School, Bloomsbury, W.C., 1866-77.
Figure Painting in Water Colours. 16 plates. Sec. XXII.

MACCLESFIELD EMBROIDERY SCHOOL (NICHOLSON, J. O., Secretary).
See Nicholson, J. O. Sec. XII.
Hoggins, James.
Adams, F. E.
Adams, James.

MACCLESFIELD SCHOOL OF ART.
See Clulow, W. J.
Adams, F. E.
Donohue, T. J.
Doran, T. E.
Hadfield. J.
Riseley, H.
Kerr, T.
Dawson, J. E.
Booth, John.
Starr, J. B.
Cartwright, A.
Thompson, William.
Grimshaw, Hugh.
Robinson, J. T.
Fowler, W. T.
Designs for Silk Fabrics. Sec. I.

McCORMICK, ARTHUR D., Belfast School, 1877–82; South Kensington, 1882–84.
Designs. Sideboard. Carved Wood Panel. A Frieze. Secs. I., VIII., XVI.

McCREA & CO., Halifax.
See Riley, J. W. Sec. XV.

McCULLOUGH, WILLIAM JOHN, Belfast School, 1877–83.
(Musgrave & Co.) Design. Iron gates. Secs. I., V.

McDONALD, J., West London School.
See "Old London."

McFADDEN, FRANK, Southampton, 1869–73; South Kensington, 1873–75.
Personal. Etchings. Sec. XIX.

McFADDEN, ROWLAND, Southampton, 1864–66. 1879–84.
Etchings. Sec. XIX.

McGEE, MARIANNE, Dublin Metropolitan School, 1866–78.
Designs. Muslin Curtains. Secs. I., XIII.
Designs. Furniture Damasks. Secs. I., XII.

McGILL, DAVID M., Kilmarnock School, 1877–84.
School Work. Monochrome. Sec. I.

MacGOUN, JANET, Edinburgh School, 1872–81.
Decoration. Sec. XVI.
School Work. Study: Still Life. Sec. I.

McGOWAN, WILLIAM, Belfast School, 1876–84.
Designs. Cup. Damasks. Lace. Secs. I., VI., X., XI.

McINROY, JOHN, Dundee School, 1870–75. 1878–82.
School Work. Engineering Drawing. Girders, Tay Bridge. Secs. I.

MACKAY & CHISHOLM, Edinburgh.
See Holiday, Thomas. Sec. VI.
Crichton, John. Sec. VI.

MACKAY & CUNNINGHAM, Edinburgh.
See Crichton Alexander. Sec. VI.

McKENZIE, GEORGE, Sheffield School, 1872–80.
Designs. Scissors. Secs. I., VI.

MACKENZIE, JOHN GUTHRIE, Belfast School, 1877–79; South Kensington, 1879–81.
(Hamilton, Hill & Co.) Damask Table Cloths, Lace Curtain. Secs. X., XI.
School Studies. 22D, 23 C. Sec. I.
Design for Silver Candlestick. Sec. VI.

McLAREN, THOMAS, Stirling School, 1877–79.
Lithographs. Sec. XVII.

McLATCHY, FREDERICK M., Kilmarnock School, 1876–79.
School Work. Machine Drawing. Studies. Sec. I.

McLATCHY, KATE C., Kilmarnock School, 1879–81.
School Work. Flowers (Water-colour). Sec. I.

McLELLAN, J. H.
(Doulton & Co.)
Faience. Tile Panels & Doulton Ware. (Doulton Pavilion). Sec. II.

McMILLAN, EMELINE S., Lambeth School, 1875–84.
Studies. Sec. I.

MADDOX, T. W., Birmingham School, 1882–84.
Designs. Lamp and Light Fittings. Sec. I., V.
(Barwell, Sons, & Co.; Crofts & Assinder; Ford, Thomas, & Co.; Whitehouse, W. & Co.) Metal Work. Sec. V.

MAFFETT, ISABELLA, Dublin Metropolitan School, 1868–73.
Design for Plate. Sec. I., II., VI.

MAGEE, T. H., & CO., Belfast.
See WARD, JAMES. Sec. XV.

MAHONY, MINNIE, Dublin Metropolitan School, 1868–73.
Design. Furniture Damask. Sec. I., XII.

MAIN, L., West London School.
Drawing in black and white. Sec. XIX.

MALKIN, EDGE, & CO., Encaustic Tile Works, Burslem.
Keramics.
See LEDWARD, R.A. Sec. II.

MALTBY, CAROLINE, Queen Square School, Bloomsbury, 1880–83.
Design for lace fan. Secs. I., X.

MANLY, ELEANOR, Queen Square School, Bloomsbury, 1869–73.
(Hildesheimer & Faulkner.) Christmas Cards. Sec. XVII.

MANNOOCH, ALFRED, West London School, 1873–74.
(Woollams.) Wallpapers. Sec. XVI.

MANSELL, CARRY.
See WATSON, MRS.

MANSELL, MARIANNE, Lambeth School, 1870–73.
Designs. Enamelled Casket. Sec. IV.
Glass. Sec. III.
Three, Lace. Sec. X.
Jewellery. Sec. VII.
Porcelain. Sec. II.

MAPPIN & WEBB, Sheffield; & Queen Victoria Street, London, E.C.
See MASON, HERBERT. Sec. V.
and MASON, HERBERT, & Co., Birmingham.

MARKS, FLORENCE, West London School, 1880–84.
Keramics. Sec. II.

MARPLES, THOMAS, Derby Central School, 1870–78.
Collective Exhibit. Sec. XVIII.
See DERBY CENTRAL SCHOOL.

MARSH, ARTHUR H., Manchester School, 1866–70.
(Falkner, G., & Sons.) Decorations. Sec. XVII.

MARSHALL, ARTHUR, Nottingham School, 1873–79.
Architectural Designs. Sec. XXI.

MARSH, JAMES F., Burslem School.
(Davenport, Messrs.) Keramics. Fruit Dish. Sec. II.
Ewers and Basins, Jugs, &c. Sec. II.

MARSHALL, JAMES F., Nottingham School, 1871–82.
Design. Iron gates. Secs. I., V.

MARSHALL, WILLIAM, Sheffield, 1862–69; South Kensington, 1869–74.
Silver Work, Models for. Sec. VI.

MARSHALL, W., South Kensington Schools.
(S. & A. Dept.) Photograph. Design for a Doorway. Plaster Decorations. Premiated 1875 by Plasterers' Company. Secs. IX., XVI.

MARTIN, ANNE O., Perth School, 1880–84.
Studies. Shading. Sec. I.

MARTIN, WILLIAM, Edinburgh School, 1868–83.
Wood Carving. Two Panels, &c. Sec. VIII.

MASON, HERBERT, & CO., Birmingham.
Ornaments in Metal and Brass Work.
See MASON, HERBERT. Sec. V.

MASON, HERBERT, Birmingham School, 4 years.
(Lent by Mappin & Webb.) Ornamental Metal Work. Brass Work. Clock Cases, Lamps, Inkstands. Sec. V.

MASON, ROBERT, Newcastle-under-Lyme School, 1881-84.
2 Dessert Plates. Sec. II.
Keramics per Mintons, Voucher Ref., No. 3541, 9th April 1884.

MASSEY, H. G., South Kensington School.
Geometrical Studies. Sec. I.
Study in Sepia. Sec. I.

MATHERS, SAMUEL, Dublin Metropolitan School, 1882-84.
Study. Bust. Sec. I.

MAW & CO., Benthal, Broseley, Salop.
See BANGHAM, JOSEPH. Sec. II.
BRADBURN, J. W. Sec. II.
CHILDE, ANDREW. Sec. II.
BARTLEY, ALICE. Sec. II.
FLETCHER, B. J. Sec. II.
GIBBONS, OWEN. Tiles. Sec. II.
FIDLER, J. B. Sec. II.

MAXWELL, BLANDINA, Edinburgh School, 1881-83.
School Work. Studies. 23 *c.* Sec. I.

MAY, SAMUEL F., West London School, 1876-84.
Studies. Group. Head. Oil. Sec. I.

MAYSTON, J. H., Great Yarmouth School, 1879-82.
Designs. Wrought Iron Gate. Silver Salts. Sec. I., V., VI.

MEADE, ELIZA, Cork—Ursulin Convent.
Irish Crochet. 2 Designs. 3 Specimens.
See CARR, MABEL. Sec. X.
HAYES, ELLEN. Sec. X.
PERRY, LIZZIE. Sec. X.

MEAR, ALBERT, Hanley School, 1882-84.
2 Dessert Plates. Sec. II.
Keramics, per Mintons, Voucher Reg., No. 3541. 9 April, 1884.

MEESON, JAMES, Sheffield.
See BOOTH, JAMES. Sec. VI.

MELDRUM, THOMAS, Nottingham School, 1871-81.
Design. Lace Curtains. Secs. I., X.

MENZIES, JAMES, Edinburgh School, 1870-77.
Silver Work. Waiter. Sec. VI.
Silver Work. Plates. Sec. VI.
(Hamilton, Crichton & Co.) Presentation Salver in Silver: Plaster reverse of. Secs. I., VI.

MERRITT, W. J., South Kensington Schools.
(S. & A. Dept.) Photograph. Design for Capital of a Pilaster. Decoration. Premiated 1876 by the Plasterers' Company. Sec. XVI.

MICKLEWRIGHT, FRED., Hanley, 1881-84.
(Bodley, E. J. D., & Co.) Keramics. Plates. Sec. II.

MIDDLETON, ALONZO, Nottingham School, 1877-82.
Design. Wall Paper. Sec. I., XVI.

MIDGLEY, JOSEPH, Halifax, 1882-1883, and Bradford Technical College, 1883.
Designs. Mixed Fabrics. Sec. XIII.

MILLBURN, G.W., York School, 1857-1865; Leeds, 1869; Chester, 1870.
Modelling. Sec. I.

MILLER, ISABEL, Lambeth School, 1875-79.
(Doulton & Co.) Keramics. Tobacco Jar. Sec. II.

MILLIGAN, W. A., South Kensington School, 1881-84. Walsall School, 1875-81.
Design. Clock Case. Secs. I., V.
Drinking Cup, silver. Secs. I., VI.

MILLSON, JOHN J., Manchester School, 1872-73.
Stone Carvings. Two Subjects. Sec. IX.

MILNE, E. P., Lancaster, 8 years.
(Milne & Sons, Lancaster.) Furniture. Cabinet. Sec. VIII.
(Appleyard & Sons, Sheffield.) Coloured Photograph. Oak Cabinet. Sec. VIII.

MILWAIN, W. J., Glasgow, 3 years at School.
(Edwards, G., & Son.) Sword of Honour.
(Lent by General Sir A. Alison, Bart., K.C.B.) Sec. VII.

MILWARD, E. J., Kendal, 1876-78. 1880-83.
Designs. Wallpapers. Carpets. Curtains. Inlaid Wood. Secs. I., VIII., XV., XVI.

MINNS, JOHN, Norwich School, 4 years.
(J. Minns.) Carved Wood Panel. Sec. VIII.

MINNS, JAMES, Norwich Schools, 8 years.
(Fletcher, B. E.) Wood Carving. Sec. VIII.
Carved Wood Panels. Sec. VIII.

MINNS, JOHN, Norwich.
See MINNS, JOHN. Sec. VIII.
MINNS, JAMES. Sec. VIII.

MINTONS, Limited, Stoke-on-Trent.
(Minton & Co.) Keramic Wares. Porcelain and Pottery. Sec. II.
See BILTON, LOUIS.
BIRKS, EDWARD.
BOULTON, ARTHUR.
BANKS, JAMES.
CONNOLLY, ARTHUR.
CRAWFORD, GEORGE.
DEAN, EDWIN.
ECCLESTONE, GEORGE.
HODGKINSON, WILLIAM.
LEWTY, RICHARD.
LITTLER, JOSEPH.
MURRELL, FREDERICK.
NAYLOR, ALBERT.
PARRY, EDWARD.
PENSON, HENRY.
PILSBURY, W. H.
PENSON, FREDERICK.
SNOW, JAMES.
HENK, JOHN.
LONGMON, THOMAS.
FERRYHOUGH, GEORGE.
KILTRIDGE, JOHN.
MASON, ROBERT.
STUBBS, THOMAS.
WHITTAKER, GEORGE.
BEACALL, FRANK.
DALTON, JOSEPH.
DEAN, THOMAS.
MEAR, ALBERT.
SLATER, WALTER.
TAYLOR, ELIJAH.

MINTON, HOLLINS, & SONS., Tile Works, Stoke-on-Trent.
See BRADLEY, SARAH A.
BUXTON, S.
DIXON, W. H.
HEWETT, J. P.
SLATER, A.
WRIGHT, A.
SIMPSON, W.

MITCHELL, ANNA, Dublin Metropolitan School, 1869–82.
Studies. Sec. I.

MITCHELL, EMILY, West London School, 1878–84.
Studies. Keramics. Secs. I., II.
Engravings. Sec. XIX.
China Plate. Sec. II.

MITCHELL, MARY, Lambeth School, 1874–84.
Studies. St. John. Sec. I.

MITCHELL, WILLIAM, Bath, 1866–1867. 1878–79.
Table Top. Inlay. Sec. VIII.
Wood Carving. Sec. VIII.

MITCHELL, WILLIAM, West London School, 1882–84.
Studies. Chalk. Sec. I.

MONTALBA, HENRIETTA, South Kensington Schools, 1868–75.
A Fan. Vellum. "The Feast." Sec. VII.

MONTALBA, HILDA, South Kensington Schools, 1868–75.
A Fan. Vellum. "La Grace." Sec. VII.

MONTFORD, H. L., Royal Albert Hall School.
Wood Carving. Sec. VIII.

MONTGOMERY, MISS, Dublin Metropolitan School, 1870–73.
Designs. Damasks. Secs. I., XI.

MOODY, ELLWARD, Huddersfield School, 1859–65.
Wood Carving. Oak Chair. Sec. VIII.

MOODY, JESSE, Bath, 1873.
Wood Carving. Sec. VIII.

MOOR, GEORGE, Manchester School.
Collective Exhibit. Chromolithograph. A Vase, drawn by Muckley, W. G. Sec. XVII.

MOORCROFT, THOMAS, Burslem, 1869–76.
(Bodley & Co.) Keramics. Plates. Sec. II.

MOORE, AMY G., Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Bowl. Sec. II.

MOORE, ESTHER MARY, Southampton, 1879–84.
Wood Carving. Panel. Sec. VIII.

MOORE, H. W., Oxford School, 1873–1874; Bristol, 1870–71.
Architectural Designs. Sec. XXI.
Title-pages. Sec. XVIII.

MOORE, JENNIE, Queen Square School, Bloomsbury, W.C., 1870–74.
Drawing from the Antique. Sec. XXII.

MOORE, MARGARET M., Leicester School, 1870–84.
Study, still life. Sec. I.

MOORE, MARION, Dublin Metropolitan School, 1881–84.
Design. Lace Flounce. Secs. I., X.

MOORE, MARY K., Bristol School, 1872–83.
A Fan. Her own Design. Sec. VII.
School Studies. Sec. I.
Designs for Carpets. Sec. XV.
Wall Papers. Sec. XVI.
Book Covers. Sec. XVIII.
Keramics Ware. Sec. II.
Linoleum. Sec. XXII.

MOORE, MARY W., Preston. Avenham Institute, 1872–81.
Design. Tea Service, &c. Secs. I., II.

MORGAN, ALFRED, South Kensington and Norwich, 1849–56.
Decorations. Sec. XVI.

MORGAN, GEORGE T., Birmingham School, 1860–67; & South Kensington, 1867–70.
Designs for Medals. Sec. VII.
Panel, after A. Durer. Sec. IX.

MORGAN GEORGE, Birmingham, & South Kensington Schools, 1866–69.
Terra Cotta, works in. Sec. II.

MORGAN, WILLIAM G., Birmingham School; and South Kensington, 1869–70.
Design. Stained Glass Window. Secs. I., III.

MORRELL, FREDERICK, Stoke-on-Trent; & Fenton School, 1880-84.
2 Dessert Plates. Sec. II.
1 Flower Holder 7*s.* 6*d.* each Sec. II.
Keramics per Mintons, Voucher Reg., No. 3541. 9 April, 1884.

MORRIS, P. WILSON, South Kensington School, 1869–74.
(Woollams) Paperhangings. Sec. XVI.

MORRIS, ROWLAND J., Burslem, and South Kensington Schools, 1865–69.
(S. & A. Dept.) Photographs. Architectural Decorations. Wedgwood Memorial, Burslem. Sec. IX.
Model Designs. Terra Cottas for Wedgewood Memorial, Burslem. Secs. I., II.
Design for a Terra Cotta Chimney Piece. Secs. I., II.

MORRIS, WILLIAM, Macclesfield Embroidery School.
(J. O. Nicholson.) Collective Exhibit. Silk Embroidery. Sec. XII.
See NICHOLSON, J. O.

MORRIS, W. H., Sleaford School, 1877–1880.
Drawing. Outline. Sec. I.

MORRISON, P., Kidderminster, 1862–1866; South Kensington, 1866–70. 1881–84.
(Green, W. & Sons; Smith, R. & Sons.) Carpets. Sec. XV.

MORRISON, WALTER, South Kensington Schools, 1864–65.
Study in Tempera, from nature. Sec. I.

MORROW, A. G., South Kensington School.
Study in Water Colour, from Life. Sec. I.

MORTON & CO., Darwell.
Lace Curtain.
See MORTON, GAVIN. Sec. X.

MORTON & SONS, Kidderminster.
See WINBURY, ALFRED. Sec. XV.
WINBURY, WILLIAM. Sec. XV.
HARVEY, J. K. Sec. XV.

MORTON, GAVIN, Kilmarnock School, 1880–84.
Damask. Secs. XI., XII.
(Morton & Co.) Lace Curtain. Sec. X.

MORTON, GEORGE, South Kensington.
Two Anatomical Studies. Sec. I.
Studies in Oil. Sec. I.

MORTON, W. SCOTT, & CO., Architects, Edinburgh.
See KING, DUNCAN. Sec. XXII.
WALKER, ROBERT. Sec. XV.
TURNER, WILLIAM. Sec. II.
MCALPINE, JOHN. Sec. XXII.
CLARKE, ROBERT. Sec. II.
RHIND, JOHN. Sec. XV.

MORTON, W. SCOTT, & CO., Tynecastle, Edinburgh.
See MORTON, W. SCOTT. Secs. XII., XVI., V., VIII.

MORTON, W. SCOTT, Glasgow School, 1856–59; South Kensington, 1862.
Tapestries. Sec. XII.
Wall-paper Designs. Sec. XVI.
Furniture Damask. Sec. XII.
(Coalbrookdale Iron Co.) Metal Work, Iron Grate. Sec. V.
Cabinet, carved. Sec. VIII.
(Gillow & Co.) Decoration (Wall). Frieze. Sec. XVI.

MOSES, JOHN, Coalbrookdale, 1856–1859.
(Coalbrookdale Iron Co.) Metal Work. Sec. V.
Iron Seats. Chimney Piece.

MOUNTFORD, FREDERICK, Kidderminster School, 1865–82.
Designs. Carpets. Technical designing. (Assisted by William Tucker, Head Master.) Secs. I., XV.

MOYNAN, RICHARD THOMAS, Dublin Metropolitan School, 1869–83.
Studies. School. Sec. I.

MUCKLEY, A. FAIRFAX, Manchester School, 1875–82.
Collective with Muckley, W. J., Stourbridge. Secs. XIV., XVI., XVII.

MUCKLEY, W. J., Stourbridge and other Schools, 1848–53.
(Hildesheimer & Faulkner) Christmas and Easter Cards. Sec. XVII.
Collective with Muckley, W. R.; Muckley, A. Fairfax.
Chromolithographs. Collective with Geo. Moore. (J. J. Sale & Sons, Manchester.) Sec. XVII.
(Potter & Co.) Printed Dress Fabrics. Sec. XIV.
(Jeffrys & Co.) Wall Papers. Sec. XVI.

MUCKLEY, WILLIAM R.; MUCKLEY, ANGELO F., Manchester School, 1875–82.
Collective with Muckley, W. J., Stourbridge. Sec. XIV.

MULLETT, ALFRED, Bath, 1879–84.
School Study. Sec. I.

MULLIGAN, W. A., South Kensington School.
Study in Chalk, from Cast. Sec. I.
Design. Silver Cup. Sec. VI.

MUNTZER, FREDERICK, South Kensington, 1866–68.
Embossed Velvet. Sec. XII.
Decoration. Sec. XXI.
Furniture. Sec. VIII.

MURRAY, C. O., Edinburgh, 1863–69.
Illuminations. Sec. XVIII.
Engraving and Etchings. Sec. XIX.
Drawings in Black and White. Sec. XIX.

MURRAY, DAVID S., Dundee School, 1877–84.
School Work. Machine Drawing. Sec. I.

MURRAY, WILLIAM H., Dublin Metropolitan School, 1856–69.
Designs. Damasks. Secs. I., XII.
Carpets. Sec. XV.

MUSGRAVE & CO., Ann Street, Belfast.
Ironwork. *See* McCULLOUGH, W. J. Sec. I.

MUTLOW, GEORGE, Worcester School, 1881–84.
Studies. Ornament. Sec. I.

NATIONAL ART TRAINING SCHOOLS, South Kensington.
See SCIENCE & ART DEPARTMENT.
SOUTH KENSINGTON SCHOOLS.

NAYLOR, ALBERT, Stoke-on-Trent & Fenton School, 1874–82.
One Oval Tray, 10*s.* 6*d.* each Sec. II.
Two Octagon Trays, 10*s.* 6*d.* each. Sec. II.
One Oval Tray, 13*s.* 6*d.* each. Sec. II.
Keramics per Mintons, Voucher Reg. No. 3541. 9 April, 1884.

NAYLOR, T. & A., Kidderminster.
See PARK, J. H. Sec. XV.
DUCK, O. Sec. XV.

NEEDHAM, R., JUNR., Sheffield School, 1872–82.
Designs. Silver Ware. Sec. VI.
(Pawson & Brailsford.) Designs. Illuminations. Sec. XVII.

NETTLEWORTH, or SHETTLEWORTH, LIZZIE, Lambeth School, 1880–81.
(Doulton & Co.) Keramics. Vase. Sec. II.

NEWMAN, ALFRED, 19 Maddox Street, W.
Silver Work for a Cabinet. Sec. VI.
See FAULKS, H. Sec. VI.

NEWMAN, W. J., South Kensington, 1871–81.
Metal Work. Sec. V.
Electro-Plate. Sec. VI.

NEWNHAM, JOSEPHINE E., Lambeth School, 1875–77.
(Doulton & Co.) Keramics. Vase. Sec. II.

NICHOLSON, J. O., Macclesfield.
See HOGGINS, JAMES. Secs. XII., XXII.
ADAMS, F. E. Secs. XII., XXII.
ADAMS, JAMES. Sec. XII.
ARMITAGE, G. F. Sec. XII.
MORRIS, WM. Sec. XII.

NICHOLSON, J. O., Hope Mills, Macclesfield, at Macclesfield School from 1856–65.
Silk and Embroidery.
See MACCLESFIELD EMBROIDERY SCHOOL.
Also *See* ADAMS, FRANK E.
ADAMS, JAMES.
ARMITAGE, G. F.
HOGGINS, JAMES.
MORRIS, WILLIAM.
NICHOLSON, J. O. Sec. XII.
Silk Embroidery; Colouring. Sec. XII.

NISBET, ETHEL CHAPMAN, Queen Square School, Bloomsbury, 1879–84.
A Fan, silk. Design. Sec. VII.
Purchased by H.M. The Queen; lent by H.R.H. Duchess of Albany.
(Rimmel.) A Fan, silk. Sec. VII.
Studies. "Chrysanthemums." Water Color. Lent by Mrs. Brightwyn, The Grove, Stanmore.
Time Study, "Daffodils." (Lent by R. H. Shepherd, Esq.) (Withdrawn.) Sec. I.

NOBLE, HENRY, West London School, 1865–78.
(Gillow & Co.) Leather Paper. Sec. XVI.
(Gillow & Co., Jeffrey & Co., Woollams & Co. Paperhangings. Sec. XVI.

NOBLE, JOHN SARGEANT, West London School, 1870–75.
Etchings. (Etched by V. Lhuillier). Sec. XIX.

NOONAN, HARIETTE, Dublin Metropolitan School, 1881–84.
Study. Ornament. Sec. I.

NORRIS, FREDERICK C., Bath, 1871–73.
Carved Wood. Sec. VIII.

NORRIS, W., Gloucester, 1870–78.
School Works, 3rd Grade. Sec. I.

NORTHWOOD, CHARLES, Stourbridge, 1880–84.
Designs. Glass Dish. Secs. I., III.
(Northwood, J. & J.) Glass. Sec. III.

NORTHWOOD, JOHN, Stourbridge School, 1854–64.
(Stevens & Williams.) Glass. Sec. III.

NORTHWOOD, J. & J., Stourbridge.
See NORTHWOOD, C. Sec. III.

NORTHWOOD, WILLIAM, Stourbridge, 1871–80.
(Stevens & Williams.) Glass. Secs. III., XIX.

NORTON, FLORENCE M., West London School, 1878–84.
Studies. Chalk and Sepia. Ornament. Sec. I.

NORTON, GEORGE, Sheffield School, 1857–60.
Wood Carving. Cabinet. Sec. VIII.
Silver Work. Sec. VI.
Metal Work. Sec. V.
Jewel Casket, &c. Sec. VI.

NORTON, HARRIETT, Cheltenham School, 1876–84.
Design. Silk Hanging. Secs. I., XII.

NORTON, MARY BRADFORD, Cheltenham School, 1874–84.
Design. Panel. Secs. I., XVI.

NOWELL, ALBERT, Salisbury School, 1878–84.
Designs. Carpets, &c. Secs. I., XV.

NOYLE, WILLIAM A., Salisbury, 1871–84.
(Yates & Co.) Carpets. Sec. XV.

NUCATOR, WILLIAM A., Dundee School, 1872–78.
School Work. Machine Drawing. Sec. I.

NUNN, WALTER, Lambeth, 1884; South Kensington, 1869–71; Charterhouse, 1868–69; Spitalfields Schools, 1859–62.
Earthenware Plaque Sec. II.
(Doulton Pavilion). Sec. II.

NUNN, J. W. (Doulton & Co.)
Faience Tiles and Doulton Ware. Sec. II.

OAKES, JANE, Burslem School, 1884.
(Doulton & Co.) Keramics. Gilt Plate. Sec. II.

OAKEY, ELIZA E., Preston, 1872–80.
Designs. Water Jugs. Playing Cards. Secs. I., II., XVII.

OATLEY, GEORGE H., Bristol School, 1880–83.
Studies. Architecture of XIII. Century. Sec. I.

O'BRIEN, KATE, Dublin Metropolitan School, 1870–76.
Study. Bust. Sec. I.

O'CONNOR, RODERIC, Dublin Metropolitan School, 1880–83.
Study. Life Studies. Sec. I.

O'FARRELL, RODERIC, Dublin Metropolitan School, 1864–68.
Study. From Antique. Sec. I.

OFFICERS OF THE 4th KING'S OWN ROYAL REGIMENT, First Battalion.
Trophy in Silver and Silver Gilt. "The Magdala." Designed by C. P. Slocomb. Manufactured by Messrs. Elkington and Co., London and Birmingham.

OGLEBY, J. T., Sunderland, 1869–72.
Bracket. Wood Carving. Sec. VIII.

"OLD LONDON"; Copies of Old XVIIth and XVIIIth Century Houses in.
Erected by Mr. Williams. Painted by Messrs. Campbell, Smith, & Campbell. E. Birch & G. Shaw, Architects. The following Student Decorators were employed on the work:—
J. Simkin, Lambeth and West London Schools.
A. Finlayson, Glasgow.
M. Southall, Bishopsgate.
J. McDonald, West London.
J. Pontis, South Kensington
J. E. Campbell, Lambeth and West London.

OLDHAM, ANNIE, Mansfield, 1882–1884.
Silk Border. Secs. XII., XXII.

OLIVER & ATCHERLEY, Manchester.
See JONES, WILLIAM. Sec. XI.

O'NEILL, ANNE, Dublin Metropolitan School, 1869–70.
Designs for Carpets. Sec. I., XV.

ORCHARD, JOHN, Stourbridge School, 1868–75. 1883–84.
(Stevens & Williams.) Glass. Engraved Cup and Saucer. Sec. III.
Decanters and Wines. Designed by F. Cardee. Executed by J. Orchard.

OSCROFT, SAMUEL W., Nottingham School, 1847–70.
(Heyman & Alexander.) 6 Lace Curtains. Bed-cover. Sec. X.

OWEN, DANIEL, & CO., Cardiff.
See HOWELL, WILLIAM. Sec. XVII.
STANIFORTH, W. Sec. XVII.

OWEN, LADY CUNLIFFE.
Glass Bowl and Plate. Cameo cut. Sec. III.
Designed by T. Woodall, Stourbridge. Manufactured by T. Webb and Sons, Stourbridge. (Lent by Lady Owen.)

OWEN, SIR PHILIP CUNLIFFE, K.C.M.G., C.B., &c.
Mantelpiece, Porcelain Ware Set. Sec. II.
Clock, Candlesticks, Flower Vases. Designed by R. Lunn, Sheffield. Manufactured by Messrs. McIntyre and Co., Burslem; and The Derby Crown Porcelain Company, Derby. Copper gilt Flagon with Cover designed by E. W. Clayton, Sheffield. Sec. VI. (Lent by Sir P. C. Owen.)

OXER, JOHN JAMES, 39 Great Marlborough Street, W. Lambeth School, 1866–67.
Designs for Jewellery. Sec. VII.

OXLAND, ALICE, Plymouth School, 1883–84.
(Brannam, C. H.) Keramics. Sec. II.

PAGE, HARRY M., Croydon, 4 years.
(Hildesheimer & Faulkner.) Christmas Cards. Sec. XVII.

PAGE, JOHN W. E., South Kensington Schools, 1881–84. Lambeth, 1879–1881.
Two Painted Decorations. Sec. XVI.

PAIGE, WILLIAM, Royal Albert Hall School. South Kensington Schools, 1882–84.
Wood Carving. Oak Panel, &c. Sec. VIII.

PALIN, MAINWARING W., South Kensington Schools, 1882–84.
Copy of Tapestry. Flemish. Sec. XV.

PALMER, ALFRED, York School, 1876–84.
Study in Chalk, from Cast. Sec. I.

PARK, ALEXANDER, and others, Glasgow School, 1881–84.
Premiated Designs. Carpets. Decorations. Renaissance. Secs., I., XV., XVI.
See also BROWN, JOHN.
FERRIS, RICHARD.
FLETCHER, JAMES.

PARK, CHARLES C., Bristol School, 1881–84.
Study. Drawing in Chalk, from cast. Sec. I.

PARK, JOHN H., Coventry School, 1870–74.
Designs. Studies. Carpets. Secs. I., XV.

PARK, J. H., Kidderminster School, 1865–68.
(Harrison, C., Naylor, J. & A., Whittall, M., & Co., Worth, T. B., Shaw, E., & Co.) Carpets. Sec. XV.
See also DUCK, .

PARKER, FREDERICK H. A., West London School, 1880–82.
Study. Chalk, Antique. Sec. I.

PARKER, WILLIAM, Lambeth School, 1878–82.
Repoussé Ware. (Doulton & Co.) Keramics. Vase. Sec. II.

PARKES & WESTWOOD, Birmingham.
Silver Ornaments.
See WESTWOOD, FRED. Sec. VI.

PARKIN, G. V., Dudley, 1858–64.
(Smart, T.) Personal. Metal Work. Sec. V.

PARKYN, JOHN H., Bristol School, 1875–84.
School Work. Designs and Water Colours. Sec. I.

PARNELL, ANNA, Dublin Metropolitan School, 1866–72.
Studies. Antique, and from life. Sec. I.

PARR, JOSEPH, Burslem School, 1869–84.
(The Brownhill Pottery Company, Tunstall.) Keramics. Cruet, Knife Handles, Biscuit Boxes. Sec. II.
(H. Wilkinson & Co., Norfolk Works, Sheffield.) Metal Work. Sec. V.

PARRY, ANNIE, Dublin Metropolitan School, 1874–81.
Design for Tapestry. Secs. I., XV.

PARRY, EDWARD, Stoke-on-Trent & Fenton School, 1881–84.
Two Dessert Plates. Sec. II.
One Small Stand, 5*s.* Sec. II.
Two Flower Holders, 9*s.* each. Sec. II.
One Twine Bucket, 13*s.* 6*d.* each. Sec. II.
Salt Cellar. Sec. II.
Keramics per Mintons.

PATEY, R. W., Ryde, 1870–76.
(Linthorpe Pottery Co.) Personal. Keramic Vases and Ewer. Sec. II.

PAWSON AND BRAILSFORD, Sheffield.
See PRYOR, C. W.
NEEDHAM, R. Sec. XVII.
BATEMAN, W. E.
PEACE, W. Sec. XIX.
PEACE, ALFRED.
GARDNER, W.
HYDES, R.
LOXLEY, R.

PEACE, WALTER, Sheffield, 1870–83; & PEACE, ALFRED, Sheffield, 1875–1884.
(Pawson & Brailsford.) Etchings. Sec. XIX.

PEACE, A. A., Sheffield School, 1875–1884.
Design. Silver Salts. Secs. I., VI.

PEARCE, ARTHUR E., Lambeth School, 1874–84.
Study in chalk from life. Sec. I.
Stained glass. Sec. III.
(Doulton & Co.) Mosaics. Keramic.
Doulton ware. Sec II.
(Doulton Pavilion.) Sec. II.

PEARCE, HENRY, Hull School, 3 years.
Silver Table Ware. Sec. VI.
(Made by H. Pearce, Huddersfield.)
Gold Key; mounted Fob and Seal. Sec. VII.
(Executed by J. Mackenzie, Huddersfield School.)

PEARCE, J., South Kensington Schools, 1882–84. Bristol School, 1876–82.
Design. Clock Case. Secs. I., V.

PEARSE, ALFRED, West London School, 1874–76. 1878–81.
Engravings, &c. Sec. XIX.

PEARSON, F., South Kensington Schools, 1883–84. Stoke-on-Trent School, 1877–83.
Design. Brussels Carpet. Secs. I, XV.

PECKITT, THOMAS, West London School, 1881–84.
Studies. Antique. Sec. I.

PEGG, WILLIAM H., Nottingham School, 1879–84.
Elementary Design. Sec. I.

PEGRAM, HENRY A., West London School, 1876–84.
Studies. "Satyr" in plaster. Sec. IX.
Design for Church Decorations. Sec. XVI.

PENSON, F., South Kensington Schools, 1883–84. Stoke-on-Trent School, 1877–83.
Design. Brussels Carpet. Secs. I,. XV.

PENSON, FREDERICK, Stoke-on-Trent & Fenton School, 1877–84.
Two Plaques, 30*s.* each. Sec. II.
Two Oval Trays, 8*s.* 3*d.* each. Sec. II.
Keramics, per Mintons, Voucher Reg. No. 3541. 9 April, 1884.

PENSON, HENRY, Stoke-on-Trent Fenton School, 1880–84.
One Oblong Slab, painted view, 15*s.* Sec. II.
One Dessert Plate. Sec. II.
Keramics, per Mintons.

PERKIN, MRS. T. DIX, Harrow.
Jewellery: Collarette, Bracelet, and Earrings. Gold.
See TONKS, JOSEPH W. Sec. VII.

PERKINS, P. S., Leicester School.
Metal Work. Design for Iron Screen. Sec. V.

PERROT AND HABERSHON, Rotherham.
See JESSOP, F. C. Sec. V.

PERRY, LIZZIE, Cork, 1874–84.
(Meade, Eliza.) Lace. Sec. X.

PERRY, WILLIAM, Dublin Royal Society School, 1858–62. 1869.
(Lambert, Mrs. Rowley.) Designs. Sec. I., XII., XVI.
(Weldon, W. H.) Decorations. Sec. XVI.
(Duffy, James, & Co.) Drawings for Lithographs. Sec. XVII.
W. Lipscombe, The Square, Isleworth.

PHILLIP, CHARLES G. L., Dundee School, 1880–83.
School Work. Machine Drawing. Sec. I.

PHILLIPS, JAMES, Gosport School, 2 years.
Design for Painted Panel. Secs. I., XVI.

PHILLIPS, MIRIAM, Dublin Metropolitan School, 1880–84.
Design for Border Inlay. Secs. I., VIII.

PHILLIPS, THOMAS, Belfast School, 3 years. South Kensington, 2 years.
Designs—Damask Table Linen. Secs. I., XI.

PHILLIPSON, JULIA, Dublin Metropolitan School, 1878–82.
Design for Embroidery. Secs. I., XII.

PHILPOT, MISS, Lambeth School.
(Doulton & Co.) Tiles. Female Heads. Sec. II.

PICK, S. PERKINS, Leicester School, 1874–78.
Architectural Studies. Sec XXI.
Design—Chancel Screen. Secs. I., XXI.

PICKERING, J. W.
See BEATTIE, CHALLEN. Sec. V.

PILSBURY, W. H., Stoke-on-Trent & Fenton School, 1882–84.
Two Oval Trays, 13*s.* 6*d.* each. Sec. II.
Two Tiles, 6 by 6, 6*s.* 6*d.* each. Sec. II.
Two Tiles, 8 by 8, 8*s.* 3*d.* each. Sec. II.
Keramics per Mintons, Voucher Reg. No. 3541. 9 April, 1884.

PINCHES, R., Chester, 1882–84. Lambeth School, 1872–1879.
(Brown, W. F. & Co.) Wood Carving, &c. Side-board. Sec. VIII.

PLATT, WALTER, Yarmouth School, 1860–84.
School Work. Designs, Tiles, Muslin, Decoration, Oak Carving.
Secs. I., II., XIII., VIII.

POLSON, JOHN, Esq., Paisley.
Silver Gilt Dessert Service. Modelled by Alexander Crichton, Edinburgh School. Sec. VI.
(Lent by John Polson, Esq.)

POMEROY, FREDERICK, Lambeth School, and City and Guilds Institute, 1874–78.
Statue. Sec. II.

POOLE, FREDERICK, Burslem, 1878–1884.
(Bodley & Co.) Keramics. Plates. Sec. II.

POOLE, J. O., South Kensington Schools, 1882–84.
Design. Table Top (Inlaid Wood.) Secs. I., VIII.
Design. Porcelain. Sec. II.

POOLE, WILLIAM, West London, 1862–64.
Studies. Sec. I.
Design for Arabesque Pilaster. Sec. XXII.

POPE, MARIE J., Bristol School, 1878–1884.
Study. Chalk Drawing from cast. Sec. I.

PORTER, FRANK, Stourbridge School, 1877–84.
Designs for Carpets. Secs. I., XV.

POTTER, E. C., & CO., Manchester.
See Muckley, W. R. } Painted Fabrics.
Muckley, A. F. } Sec. XIV.

POWELL, WILLIAM, Worcester School, 1871–76. 1884.
School Work. Cast. Sec. I.

POYNTER, EDWARD JOHN, R.A., 28 Albert Gate, S.W. Somerset House School, 1849 or 1850.
Four Frames. Ceiling Decorations. Billiard Room at Wortley Hall, near Sheffield. Design. Decoration for Soffit of Arch of Lecture Theatre, South Kensington Museum. Three Designs for Wall Tile Decoration of the Grill Refreshment Room, South Kensington Museum. Subjects, "January," "February," "March." Painted Decorations. Sec. XVI.

POYNTON, HENRY, Coventry, 1858–1864. 1877.
(Richardson, Elson, & Co.) Iron Gates. Brass work. Sec. V.

PRATT, RALPH, Leeds School, 1870–1881. 1883–84.
Study. "Discobolus." Sec. I.

PRICE, RICHARD B., Charterhouse School, 1872–73.
Bas-relief. Silver Panel. Sec. VI.

PROCOPIDES, CONSTANTINE, Manchester School, 1881–82. 1884.
School Work. Sec. I.
Design for Surface Decoration. Sec. XVI.

PROPRIETORS OF THE "GRAPHIC" NEWSPAPER."
Engravings by Wilson, Walter T.
See Wilson, W. T. Sec. XIX.

PROWETT, JAMES C., Stirling School, 1878–79. 1882–83.
Architectural Drawing. Sec. XXI.

PRYOR, W., Sheffield, 1875–78.
(Pawson & Brailsford.) Lithographs. Sec. XVII.
See also Bateman, W. E.

PURCELL, ROBERT, Manchester School, 1882–83.
(Edmundson, R. B. & Son.) Stained Glass. Sec. III.

PYM BROTHERS, Dublin.
See Ball, Susan. Sec. XI.
Jordan, Frances L. Secs. I., XI.
Baker, Anne. Sec. XIII.

QUEEN, HER MAJESTY THE.
Head in Chalk from Life. Lent by Her Majesty.
See Lovering, Ida. Sec. I.

RAILTON, JAMES, Kilmarnock School, 1875–84.
School Work. Perspective Architecture. Secs. I., XXI.

RAILTON, ISABELLA, Kilmarnock School, 1875–77.
School Work. Flowers, Water Colour. Sec. I.

RAMSEY, ALLAN, West London School, 3½ years.
(Arthur, F., & Co.) Design. Sec. I.
(Jeffreys & Co.) Wall Papers. Sec. XVI.
(Wollams & Co.) Wall Papers. Sec. XVI.

RANDALL, GEORGE, Kidderminster School, 1877–84.
Technical Designs for Carpets.
Technical. Secs. I., XV.
(Assisted by William Tucker, Head Master.)

RANDALL, W. F., Stroud, Gloucester, 1863–67. South Kensington, 1867–1869.
(Howard & Sons.) Designs. Franklin Testimonial. Cabinet and Furniture. Sec. VIII.
(S. & A. Dept.) Designs for Table Centre-pieces of Plate. (Goldsmiths' Company, 1874.) Six drawings in all. Sec. VI.

RANDALL, J., South Kensington Schools, 1857–66.
(S. & A. Dept.) 13 Coloured Photographs: Objects exhibited in South Kensington Museum. Sec. XX.
Triptychs. Champlève and other Enamels.—XIII.–XIV. Century.
Shrines and Reliquaries.—1150 A.D.
Chalice, silver gilt.—XIII. Century.
Jug, silver mounted.—XVI. Century.
Rock Crystal Cup.—1600 A.D.
Incense Boat.—1540 A.D.
Cocoanut Cup, mounted.—1815 A.D.
Caskets, Ivory.—XVII. Century.

RANKIN, MARY, West London School, 1872–79.
Study. Antique. Sec. I.

RAWLINSON, WILLIAM L., Leeds School, 1873–81.
Designs for Chintzes. Secs. I., XI.

REASON, FLORENCE, Queen Square School, Bloomsbury, 1872–81.
Autotype. Sec. XVII.
School Studies. Sec. I.
Chalk Drawing, from cast. Sec. I.

REDMOND, MARY, Dublin Metropolitan School, 1873–83.
Studies. Bust. Sec. I.

REED, GEORGE, Leeds, 1864–67.
(Roodhouse & Sons). Photograph. Furniture. Sideboard. Sec. VIII.
Imitation Enamels. Sec. II.

REEKS, MISS M., Royal Albert Hall School, 1871. 1877–80. 1881–84, South Kensington Schools.
Wood Carving. Three Pairs of Sconces—£4, £5, and £6 the pair. Sec. VIII.

REILLY, SYLVESTER, Dublin Metropolitan School, 1860–69.
Designs. Iron Work. Wood Carving. Decoration, &c.
Secs. I., V., VIII., XVI., XVIII., XXI.

REYNOLDS, HENRY, Birmingham & South Kensington Schools.
Stained Glass. Designs. Sec. I.
See CAMM, THOMAS WM.

RHEAD, GEORGE WOLLISCROFT, Stoke-on-Trent, Hanley, 1847–51; Newcastle-under-Lyme, 1856–63. 1869–71; & South Kensington Schools, 1878–81.
Imitation Limoges Enamels. Sec. IV.
Studies. Sec. I.

RHIND, JOHN S., Edinburgh School, 1872–83.
School Work. Basso Relievos and Alto Relievos. Sec. I.
Brass Work. Sec. V.

RHIND, JOHN, Edinburgh School, 1865–74.
(Morton, Scott & Co.) Tapestry. Sec. XV.
Decorations. Sec. XVI.

RHIND, JOHN, & TURNER, WILLIAM, Edinburgh School.
(Morton, Scott & Co.) Tapestry. Sec. XV.
Decorations. Sec. XVI.

RHIND, WILLIAM BIRNIE, Edinburgh, 1865–74.
Statue Models. Plaster. Sec. IX.
Model. Sec. XXI.
Photographs of Architecture. Sec. XXI.

RHODES & BARBER, Howard Street, Sheffield.
Silver Work. *See* LUNN, RICHARD. Secs. II., VI.

RHODES, JEHOIADA A., Sheffield School, 1846–48. 1854–57. 1878.
(Rhodes, J. A.) Silver plate. Designed. Sec. VI.
Metal work. Sec. V.
Silver and Electro-plate. Salad-bowl. Knife and Fork, Mounted. Sec. VI.
Metal Work. Casket, and Card Basket. Sec. VI.

RHODES, R., South Kensington Schools, 1882–84. Newcastle-under-Lyme School, 1878–82.
Design. Terra Cotta Column. Secs. I., II.
Design. Brussels Carpet. Secs. I., XV.
Design for Doorway, Plaster. Secs. I., IX.

RICHARDSON, ELLSON, & CO., Coventry.
See POYNTON, HENRY. Sec. V.

RICHARDSON & CO., Barnsley.
See INGALL, J. SPENCE. Sec. XI.

RICHARDSON, W. H., Stourbridge School, 1862–63.
(Webb, T. & Sons.) Glassware. Sec. III.
Glass Vases. Sec. III.

RICKATSON, R. O., West London School, 1872–75.
(Woollams.) Paper Hangings. Sec. XVI.

RICKETTS, F. J., Gloucester School, 1861–64.
Study. Machine Drawing. Sec. I.

RILEY, T., South Kensington School.
Portrait of Oliver Cromwell. Wood Engraving. Sec. XIX.

RIDER, H., South Kensington Schools, 1883–84. York School, 1875–83.
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Design. Drinking Cup, Silver. Secs. I., VI.

RILEY, J. W., Halifax School, 1869–83.
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RIMMEL, E., Regent Street & Strand.
Three Fans.
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RING, LILIAN, Gosport School, 2½ years.
Study. Flower Painting. Sec. I.

RISELEY, HERBERT, Macclesfield School, 1879–84.
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ROBB, WILLIAM, Aberdeen School, 1869–70. 1876–77. 1879–80.
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ROBERTS, CHARLES, Lambeth & South Kensington Schools, 1863–68.
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ROBERTS, EMMA, Lambeth School, and City and Guilds Institute, 1877–1879. 1880–84.
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Doulton Pavilion. Sec. II.

ROBERTS, FLORENCE C., Lambeth School, and City and Guilds Institute, 1875–79. 1882–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

ROBERTS, JOSEPH, Newcastle-on-Tyne School, 1875–78.
(Doulton & Co.) Pilgrim Bottles. Porcelain. Sec. II.
Assisted by Mr. John Slater.

ROBERTS. W., Stoke-on-Trent School.
(Doulton and Co.)
Pair Globular Vases. Keramics. Sec. II.

ROBERTSON, EMMALINE C., Kilmarnock School, 1875–84.
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ROBERTSON, JAMES H., Dundee School, 1876–81.
School Work. Machine Drawing. Sec. I.

ROBERTSON, JOHN, Dundee School, 1872–80.
School Work. Machine Drawing. Valves. Sec. I.

ROBERTSON & SON, Kilmarnock.
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ROBERTSON, R. G. Sec. VIII.

ROBERTSON, ROBERT G., Kilmarnock School, 1868–70.
(R. C. Robertson & Sons) Carved Oak Mantlepiece complete. Sec. VIII.

ROBERTSON, R. C., & SONS, Kilmarnack School.
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ROBERTSON, THOMAS, Kilmarnock School, 1875–79.
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ROBINSON, EDITH, Queen Square School, Bloomsbury, 1879–82.
Designs for Plates. Secs. I., II.

ROBINSON, H., Halifax School, 1865–1870.
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ROBINSON, JOHN T., Macclesfield School, 1880–84.
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ROGERS, FREDERICK, Lambeth School, 1877–84.
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ROGERS, ISABEL M., Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Vase.
Flower Pot. Sec. II.

ROGERS, KATE, Lambeth School, 1878–81.
(Doulton & Co.) Keramics. Vase. Impasto Ware. Sec. II.

ROGERS, MARK, Lambeth School, 1878–81.
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ROGERS, MARTHA M., Lambeth, 1879–84; & Westminster Schools.
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ROODHOUSE & SONS, Leeds.
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ROSSITER, HENRY, Frome School; & South Kensington Schools, 1869–70.
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ROTHERHAM & SONS, Coventry.
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BAKER, THOMAS. Sec. VII.
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ROTHERY, ALBERT, Manchester School, 1867–75.
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ROWE, ELEANOR, MISS, Royal Albert Hall School, 1870–71. West London School, 1883–84. South Kensington Schools.
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ROWLEY, JAMES, West London School, 6 years.
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RUMBLE, E. L., Lambeth School, 1880–82.
(Doulton & Co.) Doulton ware Vases. Sec. II.

RUSSELL, LOUISA, Lambeth School, 1882–84.
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RUSSELL, MARTHA, Dublin Metropolitan School, 1882–84.
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SANDES, MARY, Dublin Metropolitan School, 1880–84.
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SANGSTER, ANNIE F., West London School, 3 years.
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SATOR, DE, EDMUND C. B., Dublin Metropolitan School, 1856–74.
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Assisted by Mr. JOHN SLATER.

SEARLE, EMMA E., St. Martin's School, W.C., 1 year.
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SEAWARD, S. C., Andover, 1869–77.
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(Birchenough & Co.) Silk Brocades, Satin Damasks, Silk and Satin Handkerchiefs and Mufflers. Sec. XII.

SHELTON, CHARLOTTE F., Cheltenham School, 1880–83.
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SHEPHERD, GEORGE W., Coalbrookdale, 1871–79. 1881–82. South Kensington, 1880.
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SHERBURN, W. H. Rotherham, 1872–1883.
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SHERLOCK, JOHN A., Warrington, 1869–72, and South Kensington Schools, 1872–74; 14 Coulson Street, Chelsea, S.W. (per SIR P. C. OWEN). **No Voucher.**
Metal Work. Silver Work.
Secs. I., II., V., VI.
Designs. Lady's Hand Mirror, Salt Cellar, Tea Kettle, Claret Jug, Tankard, 5-Light Candlestick, Candelabrum, Tile Panels.

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SHRIGLEY & HUNT, John Street, Bedford Row, W.C.
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SIMPSON, W., South Kensington School, 1864–67.
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SIMMANCE, ELIZA, Lambeth School, 1874–84.
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SINGER, EDGAR R., Frome; South Kensington Schools, 1871–77.
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SINGER, JOHN W., & SONS, Frome.
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SINGER, W. HERBERT, Frome; South Kensington Schools, 1871–77.
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SLATER, EMILY, Gloucester, 1871–1884.
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SLATER, JOHN, Art Director, Doulton & Co., Burslem.
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After pictures by F. Holl, R.A., F. Hals, J. Pettie, R.A., S. E Waller.
(White, Edward.) Metal Gilt Clock Case; subject, "Death of King Arthur."
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Magdala Trophy, Silver and Silver Gilt.
Sec. VI.

SLOCOMBE, FREDERICK A., South Kensington Schools, 1861–67.
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SMALE, JOSEPH, Macclesfield School, 1864–70.
(Smale & Son.) Silk Goods Handkerchiefs and Scarves. Sec. XII.

SMALE, WILLIAM, & SONS, Macclesfield.
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SMALL, ELIZABETH M., Lambeth School, 1876–84.
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SMALL, E., MISS, Lambeth School, 1874–82.
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SMALLFIELD, KATHARINE B., Kingsland and South Kensington Schools, 1879–80; and 1883–84.
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SMART, T. Sec. V.
PARKIN, G. V. Sec. V.

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SMART, THOMAS, Dudley School, 1855–62.
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(Webb T. & Sons.) Glass. Sec. III.

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SMITH, FREDERICK GEORGE, Lambeth, 1861–63; and West London Schools.
Designs for Stained Glass Secs. I., III.
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SMITH, GERTRUDE, Lambeth School, 1859–80.
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SMITH, J. B., Halifax School, 1865–69.
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SMITH, J. MOYS, South Kensington School, 1869–70. Glasgow, 1857–60. Oxford Road, Putney.
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SMITH, MISS, Leeds School; Royal Albert Hall School.
Wood Carving. Sec. VIII.

SMITH, ROBERT CATERSON, Dublin Metropolitan School, 1868–1875.
Group. "Jason" Cup. Sec. I.

SMITH, ROBERT, Dublin Metropolitan School, 1868–75.
Study. "Jason." Sec. I.

SMITH, ROBERT, Glasgow, 1866–67; & Inverness Schools.
Wood Carving. Panel. Sec. VIII.

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SMITH, THOMAS, Coalbrookdale School, 1876–84.
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Design, Silver Plate, etc. Secs. VI., VII.

SMITH, THOMAS, Glasgow School, 1879–84.
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See WALLIS, ROSA.
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SOCKL & NATHAN, Jewin Crescent, E.C.
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SOPER, WILLIAM, Brighton School, 1862–63. South Kensington, 1875.
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(Elkington & Co.) Ornamental Metal Work. Silver. Sec. V.
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SPARKES, CATHERINE A., MRS., South Kensington Schools, 1859–61. Lambeth School, 1861–66.
Frame. Photographs of Ornamental Tiles, painted by herself. Keramics. Sec. II.
Subjects: Scene from "Comus." "King Lear."

SPENCER, A., South Kensington Schools, 1880–84.
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Design. Lace Fabrics. Curtains. Secs. I., X.

STAFFORD, GEORGE, Nottingham School, 1878–83.
Designs, Wall Paper, and Lace Curtains. Secs. I., X., XVI.

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STAPLETON, HARRY, St. Martin's School, 1871–74.
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STRANGE, W. E., Manchester School, 1880–84.
Design. Ornament. Decoration. Secs. I., XVI.

STRATTON, AMY, Salisbury, 1869–73.
(Yates & Co.) Carpets. Sec. XV.

STRODE & CO., St. Paul's Churchyard, E.C.
See TUCKER, G. E. Secs. V., XIX.

STUART, LOUISA, Lambeth School, 1883–84.
(Doulton & Co.) Keramics. Vase. Sec. II.

STUBBS, THOMAS, Newcastle-under-Lyme School, 1873–79.
One Dessert Plate. £4. Sec. II.
Keramics per Mintons, Voucher Reg. No. 3541. 9th April, 1884.

STURGEON, KATE, Lambeth School.
(Doulton & Co.) Plaque. Sec. II.

SUDDARS, FRANK, Bradford School (Grammar), 1881.
Study from Still Life. Water-colour. Stage 15B. Sec. I.

SURENNE, MARY H., Edinburgh School, 1864. 1869–82.
School Work. Chalk and Water Colour Drawings. Sec. I.

SUTHERS, WILLIAM, South Kensington School.
Study. Flowers. Sec. XXII.

SWAN, ALICE C., Cork, 1875–82.
(Sockl & Nathan.) Personal. Christmas Cards. Sec. XVII.

SWAYNE, CHARLES, Stourbridge School, 1883–84.
(Stevens & Williams.) Glass. Cut Decanter. Sec. III.
Hock Glass, orange.
Designed by F. Calder and John Northwood. Executed by C. Swayne.

SYKES, GODFREY (THE LATE), Sheffield School, 1843–54. Master of School, 1854–63.
(S. & A. Dept.) Drawings. Designs for Keramic Alphabetical Letters. Sec. XVIII.
Photographs of Terra Cotta Columns, designed by him. Secs. II., IX.

SYMES, PENELLA, Dublin Metropolitan School, 1878–84.
Design for Border Inlay. Secs. I., VIII.

TABOR, G. H., Lambeth School.
Designs. Painted Wall Tiles. Sec. I.

TANNAHILL, WILLIAM, Kilmarnock, 1871–78.
(Gregory, Thomson, & Co.) Carpets. Sec. XV.
(Barbour, Anderson, & Co.) Curtains. Sec. XV.

TARVER, JANE, Northampton School, 1877–79.
(Woollams.) Paperhangings. Sec. XVI.

TATE, EDWIN, York School, 1875–78. 1882–84.
School Work. Architecture. Rennaissance. Secs. I., XXI.

TATHAM, A. J., West London School, 1878–84.
Wood Inlay. Girondoles and Panel. Sec. VIII.
Design. Frieze in Italian Style. Sec. XXI.
Studies, Ornament. Sec. I.
(Woollams & Co.) Paperhangings. Sec. XVI.

TATLER, ALBERT, Burslem School, 1882.
(Doulton & Co.) Keramics. Two Vases. Sec. II.

TAYLERSON, JOHN E., Lambeth School, 1880–84.
Designs. Panel. Sec. I.
Panel in plaster. Sec. IX.

TAYLOR, EDWARD J., West London School, 3 years.
Study. Life Study. Sec. I.

TAYLOR, ELIJAH, Hanley School, 1881–84.
Two Flower Holders, 7*s.* 6*d.* Sec. II.
Keramics per Mintons, Voucher Reg. No. 3541, April 9, 1884. Sec. II.

TAYLOR, JOHN, Edinburgh School, 1869. 1872–75.
Studies. Antique; and from the round. Sec. I.

TAYLOR, MARGARET, Edinburgh School, 1859–63.
(R. Grant & Sons.) Illuminations. Sec. XVIII.

THATCHER, EUPHEMIA, Lambeth School, 1878–81.
(Doulton & Co.) Keramics. Vase. Sec. II.

THATCHER, W. H., Kidderminster School, 1877–84.
Technical Designs for Carpets. Secs. I., XV.
(Assisted by William Tucker, Head Master.)

THICKETT, ERNEST, Sheffield School, 1865. 1874–84.
Ornamental Wood-carved Mantle-piece. Sec. VIII.
Designs for Silver Cup. Secs. I., VI.

THOMAS, GEORGE, Cardiff School, 1867–75.
Photographs. Architectural Buildings. Sec. XXI.

THOMAS, HENRY PHELIX, Dublin Metropolitan School, 1863–68.
Designs. Sec. I.
(Fry & Co.) Damasks. Sec. XII.

THOMAS, JAMES, Westminster, Royal Architectural Museum, 1880–84.
Design for Mosaic Pavement. Secs. I., II.
Design. Silver Salad Bowl. Sec. VI.

THOMAS, JOHN, Halifax School, 1873–83.
(Eastwood, H., & Co.) Tapestry. Curtains, &c. Sec. XV.
(Ward & Co.) Hanging Tapestry.
(Thomas, J.) Tapestries. Sec. XV.
Axminster Carpet Design. Secs. I., XV.

THOMPSON, E. L., Sheffield School, 1875–77.
Silver Work. Sec. VI.

THOMPSON, MINNIE G., Lambeth School, 1882–84.
(Doulton & Co.) Keramics. Mug. Sec. II.

THOMPSON (MISS) SYDNEY M., Belfast School, 1871–83.
Design for Iron Work. Secs. I., V.

THOMPSON, SAMUEL, Sheffield, 1876. 1882–84.
(Hague & Co.) Fenders, etc. Sec. V.

THOMPSON, WILLIAM, Macclesfield School, 1876–82.
Design for Furniture Silk. Secs. I., XII.

THOMSON, EMILY G., Manchester School, 1866–70.
(Ackerman & Co.) (De la Rue & Co.) Christmas Cards. Sec. XVII.
(Falkner, G., & Sons.)
Design for Stained Glass. Sec. III.

THOMSON, JOHN, Kilmarnock School, 1877–84.
School Work. Foliage. Sec. I.
Design for Hangings. Sec. XV.
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THOMSON, R. R., Perth School, 1879–1883. Sydney Street, S.W.
Study. Stage 12a. Sec. I.

THORNLEY & CLARKE, Nottingham.
See FOSTER, A. Sec. X.

THORPE, STUART, Sheffield School, 1871–84.
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THURSTON, JAMES H., Wolverhampton, 1875–82.
Personal. School Work. Architecture. Sec. XXI.

TIDMARSH, HENRY E., West London School, 1878–84.
Design for Shield. Secs. I., VI.
Plaques. Sec. II.
Ceiling. Sec. XVI.

TINWORTH, GEORGE, Lambeth.
(Doulton & Co.) Panels and Groups. Terra Cotta. Sec. II.

TITE, G., Kilburn. South Kensington Schools, 1870–72.
Wood Carving. Tea Caddy, Table, Cabinet, Sideboard. Sec. VIII.

TOLEMAN, JAMES, 17 Goswell Road, E.C.
See SHARP, T. W. Sec. XVI.

TOMKINSON & ADAM, Kidderminster.
See ADAM, PETER. Sec. XV.

TOMLINS, HENRY J., Worcester School, 1872–82. South Kensington, 1882–84.
Designs. Sec. I.
„ for Coal Boxes. Sec. VIII.
Umbrella Stands. Sec. V.
Wall Papers. Sec. XVI.
Iron Trays. Sec. V.
Design. Silver Vase. Secs. I., VI.
Design. Earthenware Vase. Secs. I., II.
Design. Brussels Carpet. Secs. I., XV.

TONKS, JOSEPH WILLIAM, Birmingham School, 1854–63.
(Bragg, T. & J.) Jewellery. Personal Ornaments. Jewelled Bouquet Holder. Chatelaine. Presented to H.R.H. the Princess of Wales at Swansea, 1881. Sec. VII.
Lent by H.R.H. the Princess of Wales.
(Blanckensee & Son.) Silver Spade. Ivory Handle, enamelled and gilt. Presented to H.R.H. the Princess of Wales at Leicester, 1882. Sec. VII.
Lent by H.R.H. the Princess of Wales.
(Blanckensee & Son.) Gold Key. Gothic Design. Presented to H.R.H. the Prince of Wales, K.G., at Leicester, 1882. Sec. VII.
Lent by H.R.H. the Prince of Wales, K.G
(Bragg, T. & J.) Suit of Jewellery:—Collarette, Bracelet, Ear-rings (gold). Property of Mrs. T. Dix Perkin. Harrow. Sec. VII.
Lent by Mrs. T. Dix Perkin.
(Bragg, T. & J.) Gold Chain and Badge. Corporation of West Bromwich. Gift of Earl of Dartmouth. Sec. VII.
Silver Mace. Corporation of West Bromwich. Gift of Alderman R Farley. Sec. VII.
Lent by the Corporation of West Bromwich.
(Bragg, T. & J.) Gold Chain and Badge, Corporation of Stoke-upon-Trent. Gift of Colin Minton Campbell, 1875. Sec. VII.
Lent by Corporation of Stoke-on-Trent.
(Bragg, T. & J.) Photographs. The Corporation Regalia of Stockport, Accrington, Neath, Swansea, Kidderminster, Walsall and Rochester. Design for an Album Cover.
(Bragg, T. & J.) Gold Chain and Badge. Corporation of Rotherham. Sec. VII.
Lent by Corporation of Rotherham.
(Bragg, T. & J.) Silver Key, presented to John Bright, Esq., M.P., 1883, at Birmingham. Sec. VII.
Lent by John Bright, Esq., M.P.
Seals. Corporation Seals for City of Bangor and Boroughs of Accrington and Bacup. Impressions of the seals. Sec. VII.

TONKS, WILLIAM, & SONS, Birmingham.
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TOOLEY, H., Great Yarmouth School, 1881–84.
Studies, Ornament. Sec. I.
Illumination. Sec. XVII.

TORQUAY TERRA COTTA WORKS, Torquay (T. BENTLEY, Manager).
See FISHER, ALEXANDER. Sec. II.

TOWNROE, R., Sheffield School, 1848–58.
(S. & A. Dept.) Design for a Certificate. Sec. XVIII.

TRACEY, AGNES, Ipswich School, 1868–83.
(Jeffreys & Co.) Wall Papers, &c. Sec. XVI.

TRAVELL, THOMAS F., Nottingham School, 1875. 1879–80. 1882–84.
Design. Lace. Secs. I., X.

TREGO, JOHN J., Coventry School, 1866–70. 1875–84.
School Studies. Stages 3^{b}, 5^{a}, 5^{b}, 8^{b1}, 8^{b2}, 15^{a}, 22^{c}, 23^{b}, 23^{c}, 23^{d}. Sec. I.
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TRELOAR AND SONS, Ludgate Hill, E.C.
Durham Axminster Carpets. Designed by Micah Chambers, Durham School. Sec. XV.
(Lent by Messrs. Treloar & Sons.)

TREW, ANTHONY F., Bristol School, 1874–80.
Studies. Architectural Drawings. Secs. I., XXI.

TREW, JOHN F., Bristol School, 1882–1884.
Studies. Designs for Stone and Iron Screens. Secs. I., XXI.

TROWER, CHARLOTTE GEORGINA, East Herts School, 1882–84.
Designs. Lace. Secs. I., X.

TUCK, RAPHAEL, & SONS, London.
Christmas and Birthday Cards.
See JAMES, CHARLOTTE. Sec. XVII.

TUCKER, GEORGE EDWARD, West London School, 1874–84.
(Strode & Co.) Metal Work & other objects. Secs. I., V., XIX.
Carved Woodwork. Sec. VIII.
Painted Panels. Sec. XVI.
Painted Frieze. Sec. XVI.
Design for Silver Work. Sec. VI.

TUCKER, WILLIAM, Head Master, Kidderminster School.
Drawings illustrating a technical course for carpet designers, developed by himself.
See CANTRELL, JOHN.
HARRISS, GEORGE.
MOUNTFORD, FREDERICK.
BARKER, GEORGE.
CARTER, C. J.
RANDALL, GEORGE.
THATCHER, W. H.

TURNER, EDWARD J., West London School, 1875.
Design. Painted Panel. Sec. I., XVI.

TURNER, E. PAGE, Sheffield, 1854–63.
Tiles. Wood Mantel. Sec. II., VIII.
Decorations. Sec. XVI.

TURNER, F. E., Derby Central School, 1870–81.
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TURNER, WILLIAM, & RHIND, JOHN, Edinburgh School.
(Morton, Scott & Co.) Tapestry. Sec. XV.
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TURNER, WILLIAM, Edinburgh School, 1880–82.
(Morton, W., Scott, & Co.) Drawing of Actual Tiles. Sec. II.
Grate with Tiles. Sec. V.

TURTON, GEORGE F., Nottingham School, 1872.
Design. Lace Curtain. Sec. I., X.

TYZACK, HENRY, Sheffield School, 1870–80.
Study. Bas-relief. Plaster Panel. Secs. I., IX.

TYSON, JAMES, JUNIOR, Preston. Avenham School, 7 years.
School Work. Drawing in Chalk. Fruit. Sec. I.

TYSON, JAMES, SENIOR, Preston. Avenham School, 7 years.
Study in Plaster. Cornice. Sec. I.

TWEMLOW, MARY, Dublin Metropolitan School, 1881–84.
Design. Sec. I.
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TWIGGE, ANNE L., Exeter School, 1871–84.
Designs. Honiton Lace. Secs. I., X.

ULLATHORNE, THOMAS S., Selby School, 1871–84.
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URIE, ALLIE, Kilmarnock School, 1878–1884.
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Drapery. Oil Colour from Nature. Sec. I.

URSULIN CONVENT, Cork.
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Irish Lace.

URWIN or IRWIN, MARIA L., Royal Albert Hall School, Lambeth School, 1881.
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VANKOERT, CORNELIUS, West London School, 1880–84.
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VARGAS, MISS, Lambeth School.
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VARIAN, AGNES, Dublin Metropolitan School, 1879–83.
Study. Apples. Water Colour. Sec. I.

VARLEY, EMILY LUCY, Queen Square School, Bloomsbury, 1880–1884.
(Rimmel.) A Fan. Silk. Sec. VII.
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VINCE, J. M., Yarmouth School, 1871–1874. 1878–84.
School Work. Sec. I.
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WAHAB, HENRIETTA E., Royal Albert Hall; South Kensington School, 1883–84.
Wood Carving. Bellows. Sec. VIII.

WAIN, LOUIS, West London School, 4 years.
Illumination. Sec. XIX.

WAKELY, LOUISA, Lambeth School, 1881–84.
(Doulton & Co.) Keramics. Bowl. Sec. II.

WALE, J., Derby Central School, 1878–1881.
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WALES, H.R.H. THE PRINCE OF.
See H.R.H. THE PRINCE OF WALES, K.G.

WALES, H.R.H. THE PRINCESS OF.
See H.R.H. THE PRINCESS OF WALES.

WALKER, ROBERT, Edinburgh School, 1875–83.
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WALLACE, MARY, MRS., Plymouth, School, 1883–84.
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WALLACE, SIR RICHARD, Bart., Manchester Square, W.
Set of Carved Wood Bedroom Furniture. Sec. VIII.
Substituted by a Carved Cabinet per Holland & Sons, Mount Street, W. Sec. VIII.

WALLIS, ROSA, South Kensington Schools, 1873–74. 1876–79.
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Painted Photograph of the upper cover of a Book of the Gospels. Sec. XX.
Painted Photograph of the under cover of a Book of the Gospels. Sec. XX.
The property of the Earl of Ashburnham. Lent by the Council of the Society of Antiquaries of London.
Water Colour Drawing; portions of the contents of a Viking's grave, Isle of Colonsay: June, 1882.
Published and lent by the Council of the Society of Antiquaries of London. Sec. XIX.
Chromolithograph executed by Frich of Berlin. Upper and under covers of a Book of the Gospels, the property of the Earl of Ashburnham.
Published and lent by the Council of the Society of Antiquaries of London. Sec. XVII.
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WALTERS, D., & SONS, Newgate Street, E.C.
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WALTON, C. H., Reading Schools; Royal Albert Hall School.
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WALTON, F., & Co., Berners Street, W.C.
L'Incrusta Walton Decoration.
See HOLGATE, J. Sec. XVI.

WALTON & CO., FREDERICK (L'INCRUSTA WALTON), Sunbury and London.
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WALTON, WILLIAM R., Nottingham School, 1872–82.
Design for Lace. Secs. I., X.

WARD, GEORGE, Derby Central School, 1874–81.
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WARD, JAMES, Belfast, 1872–73 South Kensington, 1874–84.
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CROSSLEY, FREDERICK. Sec. XV.
SMITH, J. B. Sec. XV.
DILWORTH, SAMUEL. Sec. XV.
WEBSTER, W. H. Sec. XV.
CAMPBELL, DAVID. Sec. XV.
CAMPBELL, DUNCAN. Sec XV.

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BRAMAH, THOMAS. Sec. XXII.
BLACK, W. S. Sec. XVIII.
GIBB, WILLIAM. Sec. XVII.
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WATKINS, JOHN, Birmingham, 1871–1872; & South Kensington Schools, 1873–75.
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The Design for the Shield. Sec. VI,
J. Watkins is now in Paris. Ateliers Merson, 86 Rue Notre Dame des Champs.
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WEBB, THOMAS & SONS, Stourbridge.
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RICHARDSON, W. HENRY Sec. III.
SMITH, FRANCIS. Sec. III.
WOODALL, GEORGE. Sec. III.
WOODALL, THOMAS. Sec. III.
GOODYEAR, E. Sec. III.
DAVIS, HARRY A. Sec. III.
FEREDAY, JOHN T. Sec. III.
ADEY, WILLIAM. Sec. III.
HODGETTS, JOSHUA. Sec. III.
KING, THEODORE. Sec. III.
DAVIS, HARRY A. Sec. III.
FEREDAY, J. T. Sec. III.
HOLLIS, B. Sec. III.

WEBB, WALTER H., West London School, 4 years.
School Work. Outlines. Bust. Heads in Chalk. Sec. I.
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WELLAND, WILHELMINA, West London School, 5 years.
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WELLS, AUGUSTA, Queen Square School, Bloomsbury, 1856–61.
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WHITEHOUSE, WILLIAM, & CO., Birmingham.
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WHITESIDE, H. J., Birkenhead, 1881–1884.
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WHITE, EDWARD, 20 Cockspur Street, S.W.
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WHITE, WILLIAM H., Bristol School, 1882–84.
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WHITE, W. F., South Kensington Schools, 1879–84. Leeds School, 1875–1879.
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WHITTAKER, GEORGE, Newcastle-under-Lyme School, 1880–84.
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Two Tazzas on feet, 12*s.* 6*d.* each. Sec. II.
Keramics per Mintons, Voucher Ref. No. 3541, April 9, 1884. Sec. II.

WHITTALL, M., & CO., Kidderminster.
See PARK, J. H.
DUCK, D.

WIGG, B. H. G., Great Yarmouth School, 1880–84.
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WIGG, MARGARETTE, Yarmouth School, 1880–84.
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WILD, JAMES, Macclesfield, 1868–72.
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WILKINSON, H., & CO., Sheffield.
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WILLIAMSON, J. J., South Kensington Schools, 1869–71. 1873.
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WILSON, C. E., Sheffield School, 1865–1880.
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WILSON, E. W., Lambeth School, 1880-83.
Design. Tiles for Dado. Secs. I., II.

WILSON, GEORGE WILLIAM, Westminster School, 1883–84.
Design. Frieze for a Chimney Piece. Secs. I., IX.

WILSON, H. & SONS, Kilmarnock.
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WILSON, THOMAS, Edinburgh School, 1865–75.
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WILSON, T. WALTER, South Kensington Schools, 1868–73.
Six Frames. Drawings for Engravings; for "Graphic" and "Dramatic Notes." (Bogue) (Proprietors of "Graphic") Sec. XIX.
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(Garrards.) Two Necklaces with Pendants. Casket. For H.R.H. The Prince of Wales, K.G. Sec. VII.
(S. & A. Dept.) Coloured Photograph. Limoges Enamel Dish; in the Collection of Sir Richard Wallace, Bart. Sec. IV.
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School Work. Power Loom. Machine Drawings. Sec. I.

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WINBURY, WILLIAM, Kidderminster, 1870–80.
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WISE, W., South Kensington School.
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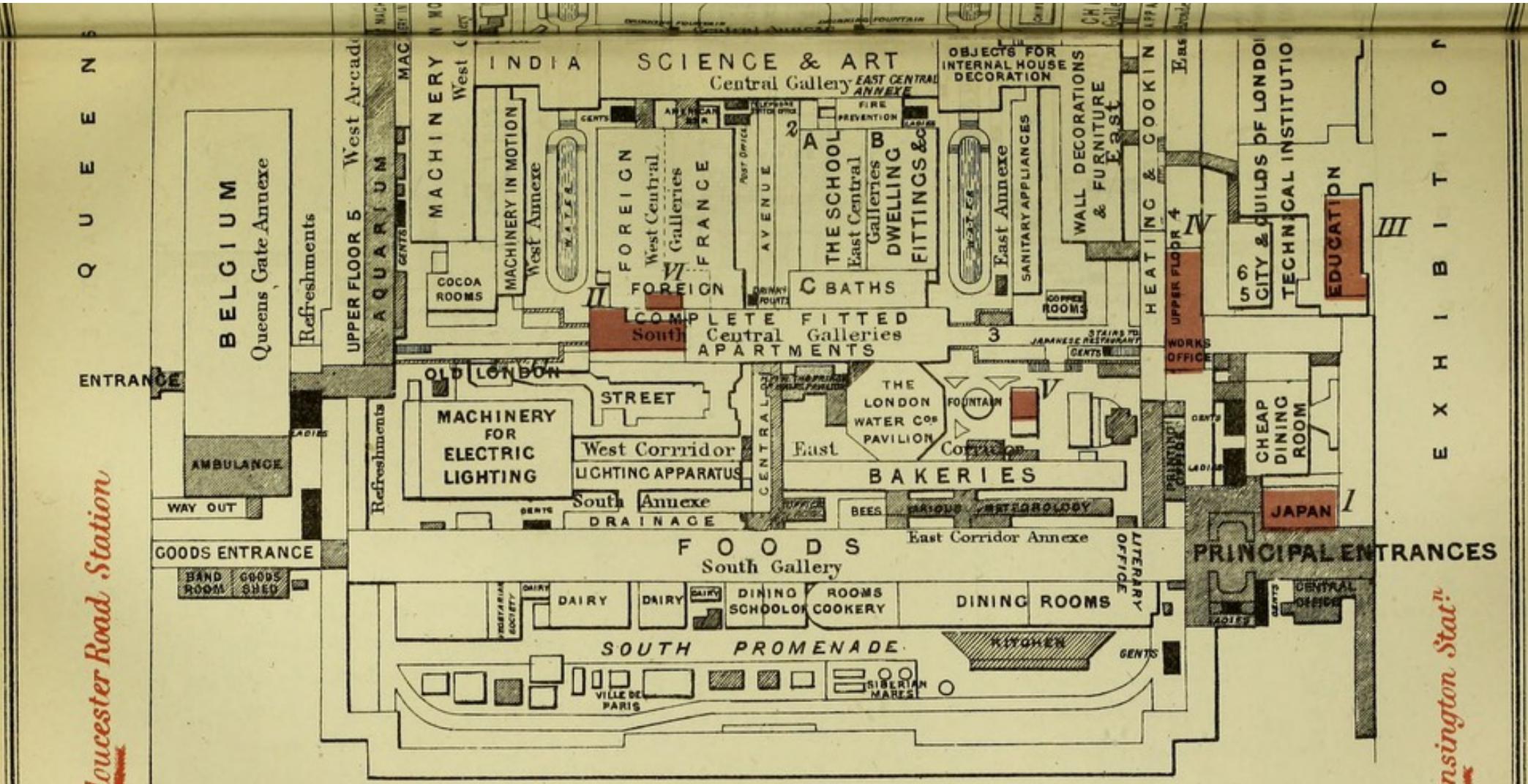

GENERAL PLAN

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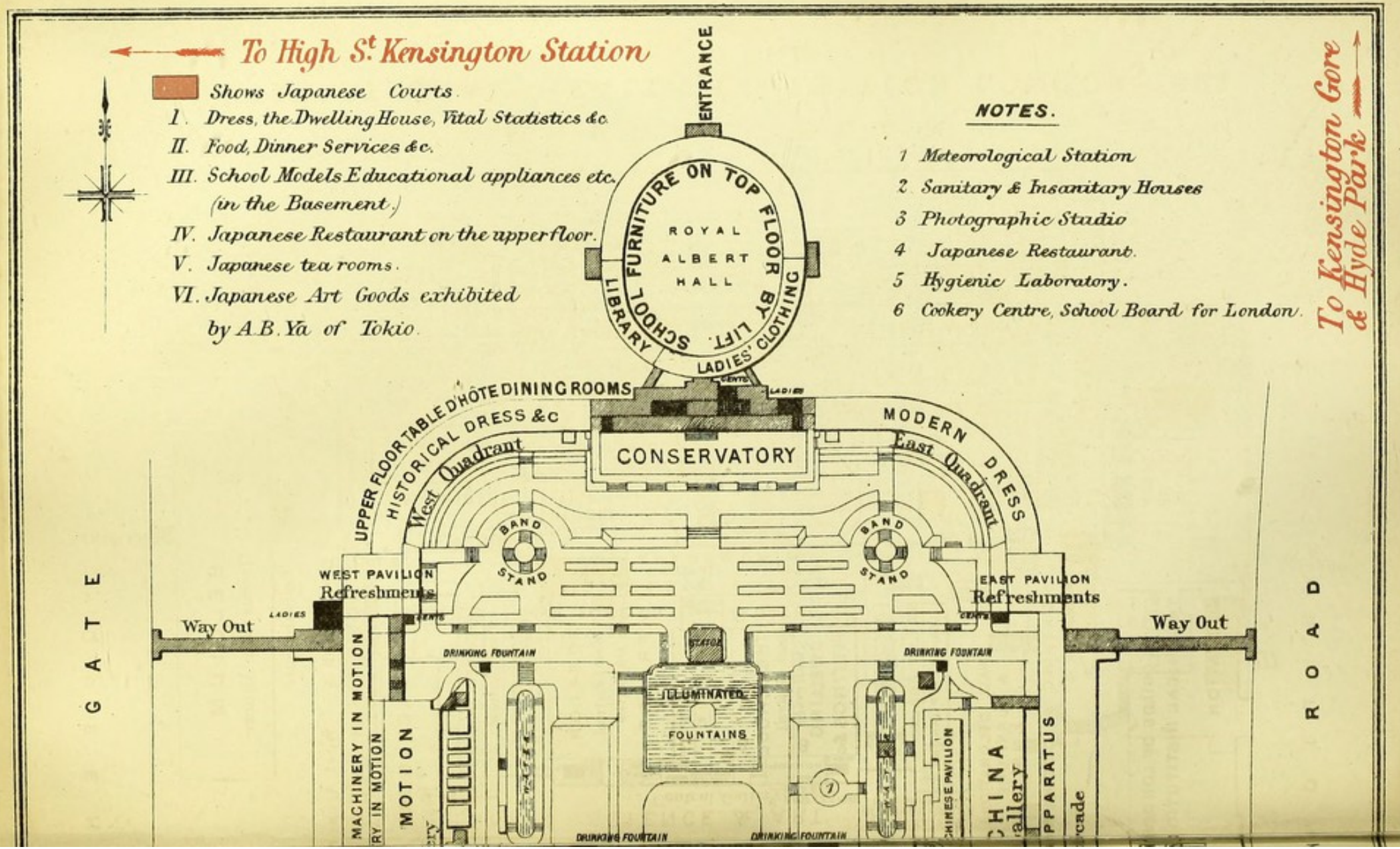
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JAPAN.

A DESCRIPTIVE CATALOGUE

OF

THE EXHIBITS SENT BY THE SANITARY BUREAU

OF THE

JAPANESE HOME DEPARTMENT.

PREPARED UNDER THE DIRECTION OF K. NAGAI, COMMISSIONER, AND J. MURAI, ASSISTANT-COMMISSIONER.

INTRODUCTION.

THE exhibits sent by the Sanitary Bureau of the Japanese Home Department to the International Health Exhibition of 1884, chiefly consist of objects of Food, Dress, and the Dwelling House, together with some specimens of Ambulance Appliances, Statistical Tables relative to Public Health, Diagrams of Meteorological Observations in their relation to the same; also literature and publications cognate to the above subjects.

The comparatively short period of forty days for the preparation of these exhibits has not enabled them to be selected with much care, nor is the Descriptive Catalogue in any sense complete.

The exhibits, however, numbering more than one thousand, and classified according to the regulations, will, it is hoped, enable visitors by the aid of this Catalogue to conceive something of the daily life of the Japanese.

One great regret is, that on account of the late arrival of the exhibits and of the Commissioners, all the Japanese exhibits could not be arranged in one locality, but are divided among three courts, viz.:—the Conference Hall on the right of the principal entrance, where Dress, the Dwelling House, Ambulance Appliances, Statistical Tables, Diagrams, &c., are shown; the West End of the South Central Gallery, devoted to Food, Dinner Services, Toilet Services, &c.; the Basement of the City and Guild Institute, wherein are exhibited School Models, Educational Works and Appliances, &c. (Educational Catalogue will be issued in a separate volume.)

Here it may as well be mentioned that the uniforms of the Imperial Japanese Navy have been contributed by the Navy Department; the Ambulance Equipment by the War Department, and the Meteorological Diagrams by the Geographical Bureau; while the Ancient Court Costumes have been lent by the Department of the Imperial Household. Some of the female costumes, toilet services, writing companions, lacquered chequer boards, &c., have been lent by the National Museum, the Marquis Mayeda (ex-Daimio of Kaga) and the Marquis Tokugawa (ex-Daimio of Owari); while certain objects of

Food and the Dwelling House have been contributed by private individuals.

Such objects as models of stone and brick houses, iron water-mains, gas fixtures, &c., as now used in Japan to a certain extent, have been purposely excluded, as it would be more desirable to show the real conditions of ordinary Japanese life. Those objects which do not properly belong to any of the classifications made by the authorities of this Exhibition, have been rejected in selecting the exhibits.

We may add that in compliance with the expressed wishes of the Executive Council of this Exhibition, we have brought with us two cooks of the first standing in Tokio, whose business it will be to bring before the English public the real methods of Japanese cookery. There will be practical demonstrations in this section. Through the cordial co-operation of the members of the Executive Council and of their staff, a Japanese restaurant has already been opened on the upper floor of the Eastern Arcade, and a tea room in the Iron House of the London Water Company's Pavilion, which latter place has been placed at our disposal by the kindness of Colonel Sir Francis Bolton, C.E.

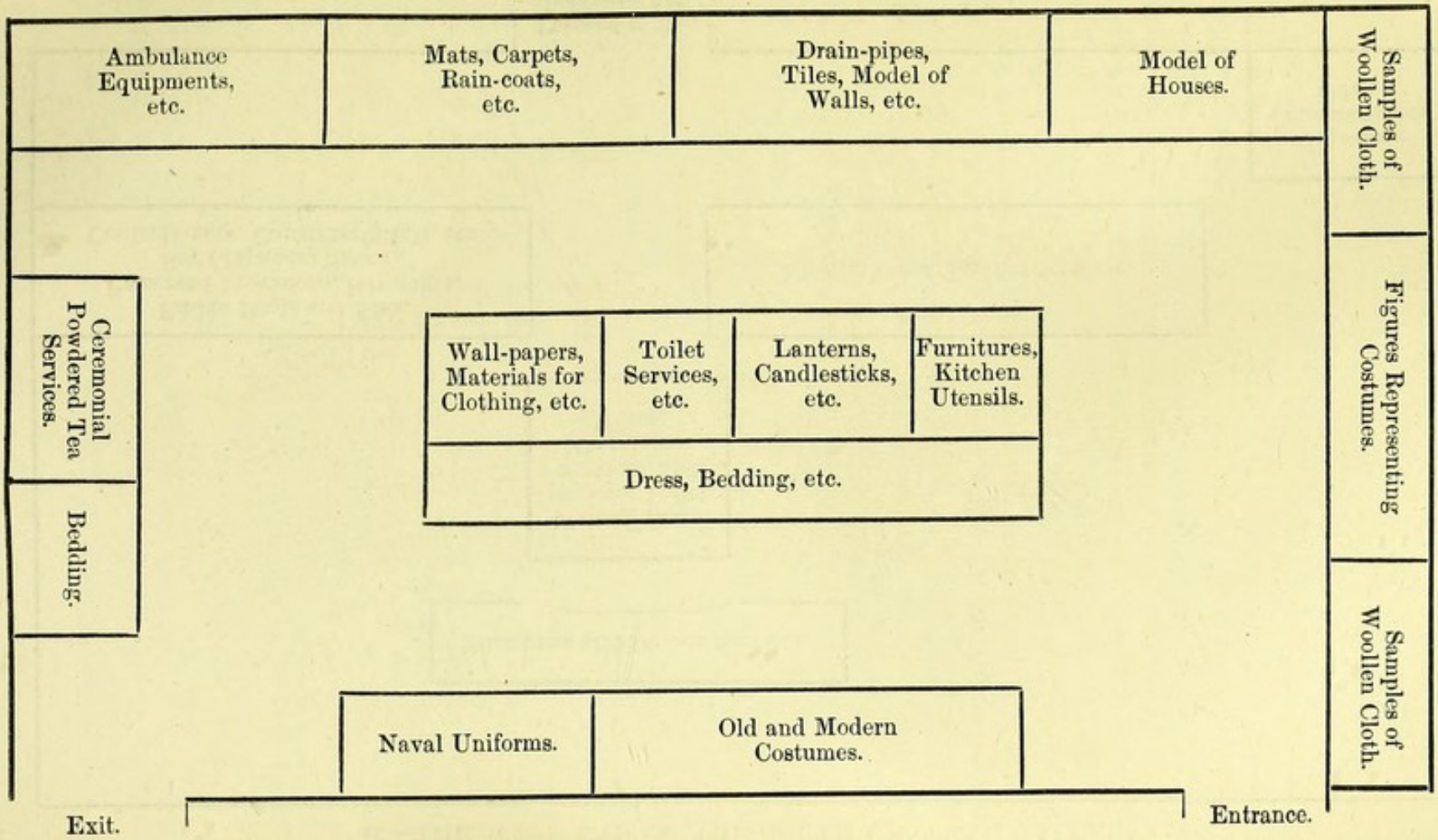
KIUICHIRO NAGAI,
Secretary of the Japanese Home Department,
Special Commissioner.

Japanese Commissioners' Office,
International Health Exhibition,
South Kensington, London, S.W.

September, 1884.

I.—CONFERENCE HALL.

(On the Right of the Principal Entrance.)



N.B.—Statistical Tables, Maps and Diagrams are hung on walls.

II.—THE WEST END OF THE SOUTH CENTRAL GALLERY.

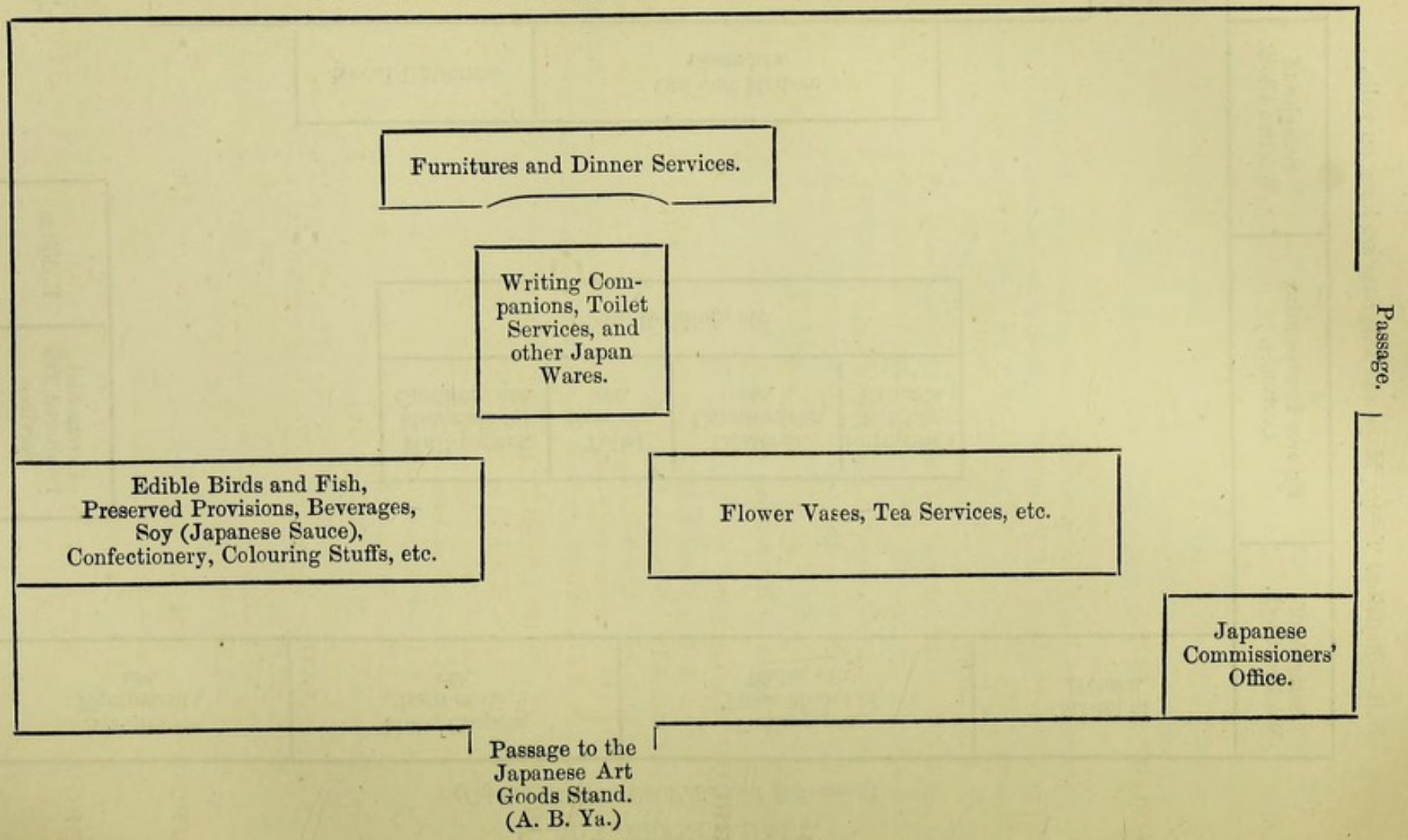


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TABLE OF JAPANESE WEIGHTS AND MEASURES.

1000000 Mō. = 100000 Rin. = 10000 Fun. = 1000 Momme. = 1 Kuwamme. (or Kanme, Kan).

1 Kuwamme = 8·28 lbs.

1 Kin = 1·325 lbs.

10000 Seki = 1000 Go = 100 Sho = 10 To = 1 Koku.

1 Koku = 4·929 bushels.

10000 Rin. = 1000 Bu = 100 Sun = 10 Shaku = 1 Jo.

1 Shaku = 11·9306 inches = ·30303 metres.

1 Shaku in clothes measure = 1·25 Shaku.

6 Shaku = 1 Ken = 19·8843 yards.

1 Chō = 60 Ken = 119·306 yards.

1 Ri = 36 Chō = 4295·01 yards.

1 Chō in land measure = 3000 Tsubo = 108,000 square feet.

DESCRIPTIVE CATALOGUE

GROUP I.—FOOD.

CLASS I.

Unprepared Animal and Vegetable Substances.

(1.) RICE (*Oryza sativa*). Kome.

General Remarks.—Rice is one of the most important cereals in Japan, and is an indispensable means of subsistence, so that there are extensive tracts of ground where this grain is cultivated. According to a return furnished in the 13th year of Meiji (1880), the extent of rice fields amounted to 2,623,677 *cho*, or 24·5% of the area of the country; and the quantities of rice obtained between the 9th and 12th years of Meiji (1876–1879) respectively were as follows*:—

Years.	9th year.	10th year.	11th year.	12th year.
Quantities of rice obtained	24,191,236 koku.	26,587,943 koku.	25,282,637 koku.	31,678,288 koku.

It would be one of the most important topics to describe exactly the amount of rice grown and the quantity consumed, but as no exact returns have been obtained. The general outline may be stated as follows:—In accordance with the return of the 12th year of Meiji (1879), if the average amount of rice consumed by adults, aged persons, and infants for one day be estimated at 3 *gō* per one person, the people who eat rice daily is 53 per cent. of the whole inhabitants. But other classes of people, such as farmers, eat such food stuffs as barley, awa, hiye, kibi, sweet potato, &c., instead of rice.

Rather large quantities of rice were supplied for brewing purposes and for making cakes, &c., during the 10th and the 11th years of Meiji (1877–1878), but the total cannot be accurately stated, as no exact returns have yet been furnished. In the 12th year of Meiji (1880), the quantity of saké had been increased to some considerable extent, but in the succeeding years there was a certain decrease, owing to the increase of the tax imposed upon saké. (*See* p. 571.)

The statistical statement of the imports and exports of rice from the 1st year to the 12th year, that is, during 12 years (1868–1879), shows that during that period there had been 1,591,321 *koku* of exports, and 3,159,750 *koku* of imports. There was thus an excess of 1,568,429 *koku* of imports over exports. The cause of such an excess in the import was the famine which prevailed during the 2nd and 3rd years of Meiji, and which claimed some large quantities of cereals from foreign countries. Therefore the above-mentioned amount cannot be taken as the yearly average.

Method of Cooking.—Rice is merely cooked by boiling with water after it has been thrashed, and has then been washed in order to free it from the bran.

The following Table, from an analysis made in the Agricultural Bureau, shows the chemical composition of the rice produced at Ise:—

Albumen	5·80
Fat	2·15
Starch	73·14
Cellulose	4·00
Ashes	1·28
Water	13·68
Total	100·00

* See the table of Weights and Measures.

The following are the most important cereals and vegetables next to rice :—

(2.) Barley (*Hordeum vulgare*). Ō-mugi.

Analysis, extracted from the Table of the Japanese foods and drinks :—

Nitrogenous substance	11·16
Fat	2·12
Starch, &c.	56·51
Cellulose	4·80
Ashes	2·63
Water	13·78
Total	100·00

(3.) Wheat (*Triticum vulgare*). Ko-mugi.

Analysis made in the Agricultural Bureau :—

Albumen	9·50
Fat	1·56
Carbo-hydrates and cellulose included	74·63
Ashes	1·93
Water	12·38
Total	100·00

(4.) Italian Millet (*Panicum italicum*). Awa.

Analysis, extracted from the Table of the Japanese foods and drinks :—

Nitrogenous substances	13·04
Fat	3·03
Starch, &c.	57·42
Cellulose	10·41
Ashes	3·05
Water	13·05
Total	100·00

(5.) Millet (*Panicum crus-corvi*). Hiye.

Analysis extracted from the Table of Japanese foods and drinks :—

Albumen	9·141
Fat	0·978
Starch and trace of Glucose	71·904
Dextrin	0·900
Cellulose	3·013
Ashes	0·834
Water	13·230
Total	100·000

(6.) Millet (*Panicum miliaceum*). Kibi.

Non-nitrogenous substances	10·89
Fat	2·95
Starch, &c.	60·95
Cellulose	5·96
Ashes	4 55
Water	14·70
Total	100·00

(7.) Soy Bean (*Glycine hispida*). Ō-mame.

Albumen	35·75
Fat	20·89
Cellulose	1·50
Starch and soluble Cellulose	24·68
Ashes	3·86
Water	11·32
Total	100·00

(7 a.) *Phaseolus radiatus.* Adzuki.

	Large kind.	Small kind.
Albumen	18·55	18·92
Fat	0·89	0·89
Gum and soluble Cellulose	55·72	55·28
Cellulose	8·80	9·05
Ashes	2·94	2·58
Water	13·10	13·30
Total	100·00	100·00

(8.) Broad Bean (*Vicia faba.*) Sora-mame.

(9.) Overlook Pea (*Canavallia ensiformis*, DC.) Nata-mame.

Albumen	2·392
Fat	0·138
Non-nitrogenous substances	5·316
Cellulose	2·276
Ashes	0·915
Water	88·963
Total	100·000

(10.) *Dolichos cultratus.* Fuji-mame.*

Albumen	2·263
Fat	0·148
Non-nitrogenous substances	3·347
Cellulose	2·460
Ashes	0·625
Water	92·157
Total	100·000

(11.) Pea (*Pisum sativum*). Yendo.

(12.) Kidney Bean (*Phaseolus vulgaris*). Ingen-mame.

Albumen	3·684
Fat	0·202
Non-nitrogenous substances	3·799
Cellulose	2·880
Ashes	0·910
Water	88·525
Total	100·000

(13.) Lily (*Lilium species*). Yuri.

Albumen	3·402
Fat	0·115
Glucose	0·628
Dextrin	1·915
Starch	19·100
Pectose, bitter substances, &c.	2·447
Ashes	1·350
Water	69·630
Total	100·000

* Some objects from (10) to (51) are represented by models or drawings.

(14.) Sweet Potato (*Batatas edulis*). Satsuma-imo.

	Large and white.	Red.	Red and sweet.
Albumen	1·02	0·92	0·82
Fat	0·29	0·26	0·39
Sugar	5·19	5·82	8·42
Starch	14·70	14·20	12·30
Extract	1·82	0·93	3·51
Cellulose	1·39	1·32	4·37
Ashes	1·09	1·35	1·07
Water	74·50	75·20	69·10
Total	100·00	100·00	100·00

(15.) Japanese Potato (*Colocasia antiquorum*). Sato-imo.

Albumen	1·427
Fat	0·080
Glucose	0·120
Starch	10·400
Pectose, &c.	1·154
Ashes	0·987
Water	85·202
Total	100·000

(16.) Japanese Potato (*Colocasia species*). Tōno-imo.

Albumen	2·835
Fat	0·292
Glucose and Dextrin	4·481
Starch	18·000
Non-nitrogenous substances (Pectose, &c.)	3·158
Cellulose	1·154
Ashes	1·280
Water	68·800
Total	100·000

(17.) Japanese Yam (*Dioscorea japonica*). Yama-no-imo.

Albumen	2·810
Fat	0·123
Starch	14·800
Non-nitrogenous substances	3·110
Cellulose	1·786
Ashes	1·174
Water	76·194
Total	100·000

(18.) *Dioscorea species*. Tsuku-imo.

Albumen	2·902
Fat	0·106
Glucose	0·852
Starch	12·200
Pectose, Dextrin, &c.	1·607
Cellulose	0·748
Ashes	1·265
Water	80·320
Total	100·000

(19.) Radish (*Raphanus sativus*). Dai-kon.

(20.) Mask-melon (*Cucumis melo*). Makuwa-uri.

Albumen	1·170
Fat	0·480
Glucose	2·500
Dextrin	0·830
Non-nitrogenous substance	0·755
Cellulose	1·240
Ashes	0·585
Water	92·440
Total	100·000

(21.) Turnip (*Brassica campestris*). Kabura.

Albumen	1·656
Fat, (Yellow)	0·070
Glucose	1·123
Dextrin	0·710
Non-nitrogenous substances	0·959
Cellulose	0·711
Ashes	0·781
Water	94·000
Total	100·000

(22.) Cucumber (*Cucumis sativa*). Kiuri.

Albumen	0 865
Fat	0·080
Glucose	0·120
Non-nitrogenous substances	1·085
Cellulose	0·740
Ashes	0·470
Water	96·690
Total	100·000

(23.) Burdock (*Lappa major*). Go-bō.

(24.) *Agaricus species.* Shimeji.

(24a.) *Agaricus species.* Hatsu-dake.

Albumen	3·770
Fat	0·765
Non-nitrogenous substance, cellulose included	12·740
Ashes	0·995
Water	81·730
Total	100·000

(25.) Egg-plant (*Solanum melongena*, L.) Nasubi.

Albumen	0·997
Fat	0·062
Non-nitrogenous substance	3·134
Cellulose	1·410
Ashes	0·424
Water	93·993
Total	100·000

(26.) Mushroom (*Agaricus campestris*). Shii-take (dried).

Albumen	11·847
Fat	1·685
Non-nitrogenous substances, cellulose included	67·508
Ashes	4·370
Water	14·490
Total	100·000

(27.) Carrot (*Daucus carota*, var. *maxima*). Ninjin.

(28.) Pumpkin (*Cucurbita pepo*). Tō-nasu.

Albumen	0·654
Fat	0·128
Non-nitrogenous substance	6·084
Cellulose	2·148
Ashes	0·762
Water	90·240
Total	100·000

(29.) Common Garlic (*Allium scorodoprasum*). Ninniku.

(30.) *Allium Bakeri*. Rakkiyo.

(31.) *Sagittaria sagittata*, var. *edulis*. Kuwai.

(32.) Bamboo Shoots (*Bambusa puberula*). Take-no-ko.

	Mosodake.	Madake.
Albumen	3·28	2·59
Fat	0·13	0·11
Sugar	1·93	0·50
Starch, &c.	1·37	1·23
Non-nitrogenous substance	1·17	1·58
Cellulose	0·90	1·10
Ashes	1·01	1·10
Water	90·21	91·79
Total	100·00	100·00

(33.) *Eutrema Wasabi*. Wasabi.

(34.) Sesame (*Sesamum indicum*). Goma.

	White kind.	Black kind.
Albumen	20·930	20·027
Fat, yellow	51·570	44·150
Cellulose, Starch, Dextrin traces, &c.	12·212	19·049
Ashes	8·360	10·120
Water	6·928	7·654
Total	100·000	100·000

(35.) Japanese Pepper (*Zanthoxylum piperitum*). San-sho.

(36.) Chillies (*Capsicum annuum*). Tō-garashi.

(37.) Mustard (*Sinapis cernua, foliis serratis*). Kara-shi

(38.) Peach (*Prunus persica*). Momo.

(39.) *Prunus trifolia*. Sumomo.

(40.) Pear (*Pyrus ussuriensis*). Nashi.

(41.) Apple (*Pyrus malus*, var. *tomentosa*). Ringo.

(42.) Orange (*Citrus aurantium*). Yudzu.

(43.) Persimmon (*Diospyros Kaki*). Kaki.

(44.) Japanese Loquat (*Photinia japonica*). Biwa.

(45.) Pomegranate (*Punica Granatum*). Zakuro.

(46.) *Stauntonia hexaphylla*. Mube.

(46A.) *Citrus nobilis*. Mikan.

(47.) Chestnut (*Castanea vulgaris*, var. *japonica*). Kuri.

(48.) Walnut (*Juglans regia*, var. *sinensis*). Kurumi.

(49.) Oak (*Quercus cuspidata*). Shii-no-mi.

(50.) *Torreya nucifera*. Kaya-no-mi.

(51.) Maidenhair Tree Fruit (*Gingo biloba*). Ginnan.

An acrid poison is contained in this fruit; such that if the poisonous juice touches the body, boils will immediately be produced. Should any one eat it raw, he will soon be affected by its poison, but when roasted, its poisonous qualities disappear entirely, and there has never been a single case of poisoning known to arise from its use when roasted.

Analysis.

Albumen	3·943
Fat	2·180
Starch	34·600
Glucose and Dextrin	1·650
Non-nitrogenous substance	5·390
Cellulose	0·385
Ashes	1·852
Water	50·000
Total	100·000

The following Exhibits (52–175) *are stuffed or preserved in alcohol :—*

Mammalia :

(52.) *Lepus brachiurus*, Temm., Species of Hare. No-usagi.

Aves :

(53.) *Turdus fuscatus*, Pall., Eastern Fieldfare or Dusky Ouzel. Chōmatsugumi.

(54.) *Hypsipetes amaurotis*, Temm., Brown-eared Bulbul. Hiyodori.

(55.) *Passer montanus*, Linn., Tree-sparrow. Suzume.

(56.) *Turtur risorius*, Linn., Barbary Dove. Shirako-bato.

(57.) *Turtur gelastis*, Temm., Eastern Turtle-dove. Kiji-bato.

(58.) *Columba livea domestica*, Common Pigeon. Do-bato.

(59.) *Coturnix japonica*, Schleg., Red-throated Quail. Uzura.

(60.) *Phasianus versicolor*, Vieillot, Green Pheasant. Kiji.

(61.) *Phasianus Soemmeringii*, Temm., Copper Pheasant. Yama-dori.

(62.) *Gallus domesticus*, Briss., Domestic Fowl. Jitori.

(63.) *Gallus domesticus*, Briss., Domestic Fowl. Shamo.

(64.) *Gallinula chloropus*, Linn., Moorhen. Ban.

(65.) *Rallus indicus*, Blyth, India Water-Rail. Kuina.

(66.) *Scolopax rusticola*, Linn., Woodcock. Botoshigi.

(67.) *Rhynchaea bengalensis*, Linn., Painted Snipe. Tamashigi.

(68.) *Gallinago scolopacina*, Bf., Common Snipe. Jishiki.

(69.) *Ardea cinerea*, Linn., Common Heron. Ao-sagi.
(70.) *Nicticorax griseus*, Linn., Night Heron. Sekuro-sagi.
(71.) *Herodias garzetta*, Linn., Little Egret. Shira-sagi.
(72.) *Anser segetum*, Gm., Bean Goose. Hishikui.
(73.) *Anser cygnoides*, Linn. Sakadzura-hishikui.
(74.) *Anser albifrons*, Gm., White fronted Goose. Karigane.
(75.) *Anas bochas*, Linn., Mallard. Magamo.
(75A.) *Anas zonorhyncha*, Swint, Dusky Mallard. Karu-gamo.
(76.) *Querquedula crecca*, Linn., Teal. Kogamo.
(77.) *Querquedula falcata*, Pall., Falcated Teal. Yoshi-gamo.
(78.) *Querquedula formosa*, Georgi, Spectacled Teal. Aji-gamo.
(79.) *Chaubelasmus streperus*, Linn., Gadwall. Okayoshi.
(79A.) *Dafila acuta*, Linn., Pintail. Onaga-gamo.
(80.) *Aix galericulata*, Linn., Mandarin Duck. Oshidori.
(81.) *Anas bochas*, Linn. var., Domestic Duck. Ahiru.

REPTILIA :

(82.) *Trionyx japonicus*, Schleg., Snapping Turtle. Suppon.

PISCES :

(83.) *Percalabrax japonicus*, Cuv. et Val., Species of Perch. Suzuki.
(84.) *Niphon spinosus*, Cuv. et Val. Ara.
(85.) *Scombrops chilodipteroides*, Bleek. Mutsu.
(86.) *Serranus moara*, Schleg. Hata.
(87.) *Sillago japonica*, Tem. et Schleg. Ki-su.
(88.) *Uranoscopus asper*, Schleg. Mishima-okoze.
(89.) *Sphyraena obtusata*, Cuv. et Val., Species of Becuna. Kamasu.
(90.) *Sciaena sina*, Cuv. et Val. Ishimochi.
(91.) *Pristipoma japonicum*, Cuv. et Val. Isaki.
(92.) *Scomber saba*, Bleek, Species of Mackarel. Saba.
(93.) *Thynnus orientalis*, Tem. et Schleg., Species of Tunny. Meji-maguro.
(94.) *Thynnus pelamys*, Cuv. et Val., Bonite. Katsuwo.
(95.) *Cybium niphonium*, Cuv. et Val. Sawara.
(96) *Caranx muroadsi*, Schleg., Species of Sead. Muro-aji.
(97.) *Caranx muroadsi*, Schleg., Species of Sead. Maru-aji.
(98.) *Caranx equula*, Schleg., Species of Sead. Kira-aji.
(99.) *Trachurus trachurus*, Linn., Species of Sead. Ma-aji.
(100.) *Seriola Dumerilli*, Riss. Kanpachi.
(101.) *Seriola quinqueradiata*, Schleg. Buri.
(102.) *Seriola Lalaudii*, Cuv. et Val. Takabe.
(103.) *Latilus argentatus*, Cuv. et Val. Ama-dai.
(104.) *Equula nuchalis*, Schleg. Gichi.
(105.) *Prionurus scalprum*, Langsd. Nisa-dai.
(106.) *Hoplegnathus fasciatus*, Schleg. Ishi-dai.
(107.) *Diagramma cinctum*, Schleg. Koshō-dai.

(108.) *Mugil nematocheilus*, Schleg., Species of Mullet. Menada.
(109.) *Mugil cephalotus*, Cuv. et Val., Species of Mullet. Ina.
(110.) *Ditrema Temminckii*, Bleek. Umi-tanago.
(111.) *Chrysophrys hasta*, Bleek. Kuro-dai.
(112.) *Pagrus major*, Schleg., Species of Braize. Tai.
(113.) *Trigla Kumu*, Lacep, Species of Gurnard. Hō-bō.
(114.) *Lepidotrigla microptera*, Gthr., Species of Gurnard. Kanagashira.
(115.) *Pelor japonicum*, Cuv, et Val. Oni-okoze.
(116.) *Sebastes marmoratus*, Cuv. et Val. Kasago.
(117.) *Chirus hexagrammus*, Pall. Ainame.
(118.) *Gasterosteus noveboracensis*, Cuv. et. Val., Species of Stickleback. Itoio.
(119.) *Lophius setigerus*, Whal., Fishing-Frog. Anko.
(120.) *Centronotus nebulosus*, Schleg. Kinpo.
(121.) *Gobius flavimanus*, Schleg. Haze.
(122.) *Trichiurus japonicus*, Bleek. Tachiuwo.
(123.) *Fistularia serrata*, Bleek. Yagara.
(124.) *Oncorhynchus Perryi*, Hilgd., Species of Salmon. Masu.
(125.) *Plecoglossus altivelis*, Schleg. Ayu.
(126.) *Salanx microdon*, Bleek. Shira-uwo.
(127.) *Saurida argyrophanes*, Richards. Yeso.
(128.) *Cyprinus carpio*, Linn., Carp. Koi.
(129.) *Carassius auratus*, Linn. Funa.
(130.) *Opsariichthys platypus*, Schleg. Oikawa.
(131.) *Misgurnus anguillicaudatus*, Cantor. Dojō.
(131A.) *Belone schismatorhynchus*, Bleek, Species of Gar-fish. Datsu.
(132.) *Hemiramphus sayori*, Schleg. Sayori.
(133.) *Exocetus agoo*, Schleg., Flying-Fish. Tobi-uwo.
(134.) *Clupea zunasi*, Bleek. Tsunashi.
(135.) *Clupea melanosticta*, Schleg., Species of Sardine. Iwashi.
(136.) *Chatoessus functatus*, Schleg. Konoshiro.
(137.) *Silurus asotus*, Linn., Species of Silurus. Namadzu.
(138.) *Parophrys cornuta*, Schleg., Meita-garei.
(139.) *Pseudorhombus cinnamomeus*, Schleg. Hirame.
(140.) *Plagusia japonica*, Schleg., Species of Sole. Ushinoshita-Karei.
(141.) *Anguilla bostoniensis*, Les., Eel. Unagi.
(142.) *Congramuraena anago*, Schleg. Anago.
(143.) *Muraeuesox cinereus*, Forsk. Hamo.
(144.) *Mustelus manazo*, Bleek., Species of Haund. Hoshi-zame.
(145.) *Trigon pastinaca*, Linn., Sting-Ray. Akayei.

CRUSTACEA :

(146.) *Palaemon longipes*, De Hann., Species of Shrimp. Tenaga-yebi.
(147.) *Palinurus japonicus*, De Sieb., Species of Lobster. Ise-yebi.
(148.) *Penaeus semisulcatus*, De Haan., Species of Shrimp. Kuruma-yebi.

(149.) *Penaeus ensis*, De Haan, Sword Shrimp. Shiba-yebi.
(150.) *Portuus pelagicus*, Fabr., Species of Crab. Kasami.
(151.) *Squilla oratoria*, De Haan, Species of Mantis Shrimp. Shako.

MOLLUSCA:

(152.) *Octopus sp.* Tako.
(153.) *Octopus sp.* Ii-dako.
(154.) *Sepia sp.*, Species of Cuttle-fish. Ma-ika.
(155.) *Ommastrephes sp.* Surume-ika.
(156.) *Paludina Sclateri*, Frauenfeld. Tanishi.
(157.) *Turbo cornuta*, Gmel. Sazai.
(158.) *Rapana bezoar*, Linn. Akanishi.
(159.) *Haliotis gigantea*, Chemnitz, Species of Sea-ear. Awabi.
(160.) *Haliotis grunri*, Phil., Species of Sea-ear. Tokobushi.
(161.) *Eburna japonica*, Reev. Bai.
(162.) *Ostrea sp.*, Oyster. Kaki.
(163.) *Pecten laqueatus*, Sowerby, Species of Scallop. Itaya-gai.
(164.) *Pecten yessoensis*, Lay, Species of Scallop. Hotate-gai.
(165.) *Pinua japonica*, Hanley, Species of Pinna. Tairagi-gai.
(166.) *Arca inflata*, Reev. Aka-gai.
(167.) *Arca subcrenata*, Sischke. Sarubo.
(168.) *Mactra sulcataria*, Desh. Baka-gai.
(169.) *Mactra veneriformis*, Desh. Shiwofuki.
(170.) *Cytherea meretrix*, Linn. Hamaguri.
(171.) *Tapes decussatus*, Linn. Asari.
(172.) *Cyrena pexata*, Prime. Shijimi.
(173.) *Solen grandis*, Dunker, Species of Razor-shell. Mate.

RADIATA:

(174.) *Stichopus japonicus*, Sek., Species of Sea-cucumber. Namako.
(175.) *Strongylocentrotus tuberculatus*, Dunk., Species of Sea-urchin. Uni.

CLASS II.

PREPARED VEGETABLE SUBSTANCES.

Tinned Provisions.

The substances mentioned in the following list (176-191) are tinned vegetables:—

(176.) BAMBOO SPROUTS (*Bambusa puberula*). Take-no-ko.
(177.) MUSHROOM (*Agaricus species*). Matsudake.
(178.) *Tuber spadiceum.* Shō-ro.
(179.) MUSHROOM (*Agaricus species*). Shimeji.
(180.) *Alaria cordata.* Udo.
(181.) TURNIP (*Brassica campestris*). Kabura.
(182.) RADISH (*Raphanus sativus*). Dai-kon.

(183.) Carrot (*Daucus carota*). Ninjin.

(184.) Pea (*Pisum sativum*). Yendō.

(184a.) Young pods of *Pisum sativum*. Saya-yendō.

(185.) Kidney Beans (*Phaseolus vulgaris*). Ingen-mame.

(186.) Ginger (*Amomum Zingiber*). Shōga.

(187.) Japanese Potatoes (*Colocasia antiquorum*). Sato-imo.

(188.) Burdock (*Lappa major*). Go-bō.

(189.) Lotus Root (*Nelumbo nucifera*). Hasu.

(190.) Field Horse Tail (*Equisetum arvense*). Tsukushi.

(191.) Brake Fern (*Peteris aquilina*). Warabi.

Compressed or Preserved Substances.

(192.) Dried fruit of *Lagenaria vulgaris*. Kan-pio.

The method of manufacturing is the following :—The first step is to cut off the extremities ; then the seeds and pulp are taken out. The fruit is then cut to a certain length, and is dried by hanging it on sticks. It will thus be preserved for a long period, if kept in proper vessels and closed tightly. The method of cooking is by boiling with water, soy, sugar, mirin (sweet wine), etc.

Analysis.

Albumen	8·322	
Extract by Petroleum ether	1·544	
Glucose	20·080	
Dextrin	15·410	
Non-nitrogenous substances and starch traces	18·688	
Cellulose	10·686	
Ashes	4·920	
Water	20·390	
Total	100·040	
Carbon	37·855	Dry substances, 79·65%
Nitrogen	1·310	
Hydrogen	4·380	
Oxygen	31·182	
Ashes	4·920	
Water	20·350	
Total	99·997	

(193.) Mushroom (*Agaricus campestris*). Shii-take.

The method of growing mushrooms is the the following:—Various tall trees are cut down, marks are made by knives, and the trees left for two years upon the ground. On a winter day the timber is cut into pieces and the logs left inclining to a fence, or made into square piles and left alone for from two to four years. Mushrooms then begin to grow in rainy season. They are afterwards covered over, and the full-grown ones are picked. These are called "spring mushrooms," to distinguish them from those which grow in the autumn and which are called "autumn mushrooms." The gathered mushrooms are compressed with bamboo sticks and dried by exposure to the open air or to fire.

Use.—Dip into cold water or warm water for some time. Boil with soy, sugar, or "mirin," etc., or serve with soup.

Analysis.

Albumen	11·847	
Extract by Petroleum ether	1·685	
Non-nitrogenous substance (cellulose, etc.)	67·508	
Ashes	4·370	
Water	14·490	
Total	99·900	
Carbon	37·249	Dry substances, 85·51%
Nitrogen	1·860	
Hydrogen	5·454	
Oxygen	36·577	
Ashes	4·370	
Water	14·490	
Total	100·000	

(194.) KANTEN. A Vegetable Isinglass.

Preparation.—Soak Agar-Agar (*Gelidium corneum*) in water, and pound well in a mortar until bubbles are formed, and the colour becomes greyish. Then pour into a basket, and again into a large basket dipped in water, and stirred until turbid water arises. Next spread upon a mat made of bamboo or reeds woven together. After thus drying, put into a mortar again and pour hot water on the mass. Then boil at a gentle heat, and when the weed becomes pasty, pour into a linen-bag and squeeze into a vessel and leave it to coagulate. The jelly may be cut into threads with a knife or a tool called "tentsuki," and made to freeze by exposing the pieces to intense cold in thin layers upon bamboo-mats. "Tokoroten" is the same in material as "Kanten," but the former is only dried and not frozen as the latter is. Its purification is not so thorough as "Kanten," and it is not stored up in a dry state.

Use.—"Kanten" is used as a material in making confectionery, and also as food. In summer, it is prepared by pouring hot water upon it, and left to coagulate. It is then cut into fine threads by "tentsuki"; mixed with water and seasoned with sugar or soy, according to taste, and served. It is also used for purifying turbid "sake."

Analysis.

Albumen	11·71
Non-nitrogenous substances	62·05
Ashes	3·44
Water	22·80
Total	100·00

(195.) FROZEN "KONNIAKU."

The tuber of Conophallus Konnyak when pounded and coagulated by the action of lime, is called "Konniaku." Frozen "Konniaku" is made by cutting "Konniaku" into thin slices, drying and afterwards freezing it by exposure to intense cold.

It is used as food after soaking in warm water.

(196.) MINOBOSHI-DAIKON. Desiccated Radish (very slender variety, Hadana-daikon).

The method of cooking is by cutting it into small pieces, soaking in vinegar, soy and mirin for a few days. It is also eaten with soup.

(197.) FU.

Preparation.—A quantity of wheat flour after having been soaked in water for two hours, is trodden with the feet and then kneaded with the hands for about two hours until it becomes tough and elastic. This is raw Fu, and when roasted it is called Roast Fu.

Use.—Nama-fu (raw Fu) is prepared for eating by boiling it with any other food. Yaki-fu (roasted fu), at the time it is to be eaten, is made soft by dipping it into warm water, and is cooked with other kinds of food.

It is made of wheat flour, and is a moist substance usually preserved under water. It has a greyish white colour, and is of no definite size. As the quality of the wheat flour and the mode of making it into Fu differ, so does the ratio of gluten and starch contained in it.

Analysis.

	Wet.	After drying.
Albumen	13·31	46·64
Fat	0·17	0·60
Glucose	0·51	1·78
Cellulose	0·15	0·53
Non-nitrogenous substances	14·02	49·12
Ashes	0·38	1·33
Water	71 46	—
Total	100·00	100·00

Analysis.

	Wet.	After drying.
Carbon	13·43	47·06
Nitrogen	2·13	7·46
Hydrogen	1·88	6·59
Oxygen	10·72	37·56
Ashes	0·38	1·33
Water	71·46	—
Total	100·00	100·00

(198.) "KATAKURI" STARCH.

Preparation.—The bulb of *Erythronium dens-canis* is crushed, washed with water, and decanted. The precipitated starch is collected, spread upon mats, dried by exposure to the sun, and finally ground into fine powder.

Use.—It is made into something like vermicelli, called "Katakuri men," and is chiefly used as a material for making confectionery, or made into paste by adding hot water. It is served with sugar and makes a very delicious food.

Analysis.—Pure starch.

(199.) "KUZU" STARCH.

Preparation.—The root of *Pueraria Thunbergiana* is pounded, placed in a tub with water, stirred, and afterwards filtered through a linen bag. The starch is allowed to settle, is washed and decanted several times, and finally dried.

Use.—It is principally used for confectionery. It may also be served with sugar by making it into paste, with addition of hot water. It is not unfrequently used in cookery.

Analysis.—Pure starch.

(200.) "WARABI" STARCH.

In the season when the Brake fern, *Pteris Aquilina* is withered, and no young shoot is to be seen, its root is collected, cut up into pieces, pounded, washed, decanted, and the settled starch is collected and dried.

Use.—It is mixed with wheat-flour or rice-meal and made into cakes, or when made into paste by boiling with water mixed with the astringent juice of persimmon, it is used for joining paper together, the joint does not part though exposed to rain, hence it is widely used for this purpose.

Analysis.—Starch.

(201.) BUCKWHEAT. Soba-ko.

Preparation.—Buckwheat (*Fagopyrum esculentum*) is reaped when its seed is quite ripe. The seed is beaten off, and pounded in a mortar and sifted. The flour repeatedly sifted is the best.

Use.—It is mixed with some wheat-flour, made into a thick paste by adding a little water, pressed out into a thin plate, rolled, cut into fine threads, and steamed.

It is served either hot or cold, with the sauce made of "soy," "mirin," "Katsuwobushi," and seasoned with spices. This is called "Sobakiri." It is sometimes made into a tough paste by pouring hot water and heating, stirring constantly all the time. It is also served with spices and the sauces above mentioned, and is called "Sobagaki."

Analysis.—It consists principally of starch.

(202.) Domioji.

This is prepared by steaming, drying, and grinding white rice (*Oryza sativa*) of the best quality.

Use.—Hot water is poured upon it, and before it gets too soft, it is eaten with sugar. It is also used for confectionery.

(203.) Hijiki, sea-weed (*Cystoseira species*).

Method of Preserving.—The sea-weed which attaches to the rocks at the bottom of the sea, in February and March, is collected. It is afterwards boiled in an iron pan for about two hours, and when its colour has the appearance of lacquer, the sea-weed is taken out and dried in the sun. If it is protected from moisture, it will keep for a number of years.

Use.—It is boiled with water; when it becomes soft, it is strained, flavoured with "soy," sugar, "mirin," or some such things, and eaten.

Analysis.

Albumen	11·585
Extract by petroleum ether	0·488
Non-nitrogenous matter substances (cellulose, etc.)	54·627
Ashes	17·560
Water	15·740
	100·000

Carbon	30·435	Dry substances 84·26 %
Nitrogen	1·819	
Hydrogen	4·505	
Oxygen	29·941	
Ashes	17·560	
Water	15·740	
	100·000	

Though this substance does not contain glucose or dextrin, it contains a small quantity of mannite.

(204.) Ogo, sea-weed (*Gigartina sp.*).

Method of Preserving.—It grows upon the rocks at the bottom of the sea in the latter part of February. It is gathered during ebb-tide in June, and stored after drying it by exposure to the sun.

Use.—If hot water is poured upon it just before use, it becomes green, and appears quite fresh. It is only used as a garnish to "Sashimi" (fresh fish cut into thin slices and served in the raw state, with "soy" and other seasoning substances). It plays the same part as parsley in European cookery.

205.) Wakame, sea-weed (*Alaria pinnatifida*).

Method of Preserving.—During ebb-tide in February, it is gathered by rolling it upon a rod. After gathering. it is hung upon ropes, stretched between posts, and stored after being dried by the heat of the sun. If it is washed with fresh water several times, the saline taste is removed and it becomes very sweet. The sea-weed thus prepared is called "shionuki wakame" (lit. salt extracted wakame), and that which is prepared by sprinkling ashes of shrubs upon it and drying in bundles, is called "hai wakame," that is ash-wakame.

Use.—It is softened by soaking in hot water, and afterwards served steeped in vinegar, "soy," or "mirin," for some time, or it is put into soup and served.

Analysis.

Albumen	11·838
Extract by petroleum ether	0·310
Non-nitrogenous substances (cellulose, etc.)	37·592
Ashes	31·350
Water	18·910
	100·000

Carbon	21·310	Dry substances 81·090 %
Nitrogen	1·858	
Hydrogen	3·352	
Oxygen	23·220	
Ashes	31·350	
Water	18·910	
	100·000	

It contains a large quantity of mannite, and its ash contains some iodine; but compared with *Laminaria*, these are quite insignificant.

(206.) Agar-agar (*Gelidium corneum*). Tengusa.

Method of Gathering.—The sea-weed adhering to rocks is gathered and dried by the sun. The season for gathering varies, however, with districts, from early summer to early autumn.

Use.—It is the material for making "tokoroten" and "kanten."

Analysis.

Nitrogenous substances	9·80
Non-nitrogenous substances	52·20
Fibre	5·00
Ashes	14·50
Water	18·50
Total	100·00
Nitrogen	1·55

(207.) Tangle. (*Laminaria japonica*) Kombu.

Preparation.—It grows in the northern sea. It is cut at the bottom of the sea by divers. This, when sun-dried, is called ordinary "Kombu." Various articles are manufactured from it, and they are often coloured red, green, etc. The following words are prefixed to them according to their forms.

1. Mosoku.
2. Oboro.
3. Suishio (crystal).
4. Usuyuki Shiraga.
5. Yukinouye.
6. Matsuba (pine leaves).

Use.—It may be used as a food by boiling with "soy," sugar, "mirin," &c., or served in soup.

Analysis.

Albumen	7·247
Extract by petroleum ether {dark bluish green, fat, chlorophyl}	0·866
Non-nitrogenous matter (cellulose, &c.)	47·567
Ashes	21·240
Water	23·080
	100·000

Carbon	23·124	per cent.	Dry substances 76·92 per cent
Nitrogen	1·138	,,	
Hydrogen	3·612	,,	
Oxygen	27·806	,,	
Ashes	21·240	,,	
Water	23·080	,,	
	100·000		

It contains a large quantity of mannite; extracted with warm alcohol, and after recrystallizing several times, 16·5 per cent. of mannite were obtained. Its ash contains a small quantity of iodine.

(208.) Laver, Dried (*Porphyra vulgaris*). Asakusa-nori.

Method of gathering.—The period for gathering laver is the latter part of September. The twigs of the *Hō* (*Magnolia hypoleuca*), of the oak, or of the *Keyaki* (*Zelkowa Keaki*) are made up into faggots, which are placed upon the bottom of the sea, at low tide, and after 30 or 40 days the weeds grow around the faggots. After severing it from the faggots, it is thoroughly washed several times, in order to remove the dirt clinging to it, and then it is put into tubs and cleaned with pure water. After it is thoroughly cleansed, it is dipped out of the tub with a grain measure, spread on a raised stand, called *nagashi dai*, that has been previously covered with bamboo screens. To prevent the substance from running over each screen is surrounded with a rim. The weed is left until the water has all oozed away. The rim is then removed, and afterwards the screen with the *porphyra vulgaris* is taken off, and the latter is picked off and exposed to the rays of the sun, after which it is stored. Recently the modes of procuring and of preserving this sea-weed have been improved to some extent, there has also been an increase in the variety of ways of curing it, either in the green state or by drying and salting it (such are Ajitsuke-nori, Matsuba-nori, &c.).

Use.—To prepare the cured weed for table, it is placed over a fire and dried, and then eaten with rice; it has a very delicious *bouquet* and flavour, and is highly esteemed by every one.

Analysis.

Albumen (Nitrogen 5·4)	33·75
Extract by petroleum ether	1·30
Non-nitrogenous substances	41·22
Ashes	9·75
Water	13·98
	100·00

Carbon	37·60	Solid substance 86·03 per cent.
Nitrogen	5·40	
Hydrogen	4·66	
Oxygen	28·62	
Ashes	9·75	
Water	13·97	
	100·00	

(209.) Awonori, Dried (*Enteromorpha compressa*).

Analysis.

Albumen	19·721
Extract by petroleum ether	1·730
Non-nitrogenous substances (Cellulose, &c.)	45·809
Ashes	19·210
Water	13·530
	100·000

Carbon	26·857	Dry substances 86·47 per cent.
Nitrogen	3·096	
Hydrogen	4·030	
Oxygen	33·277	
Ashes	19·210	
Water	13·530	
	100·000	

(210.) Frozen Bean-Curd. Kōri-tōfu.

It is made by freezing common bean-curd. Bean-curd is made of *Daidzu Glycine* (soja) *hispida* and contains a large quantity of vegetable albumen. This is one of

the most frequent kinds of food of the middle and lower classes of the people of Japan; it contains an abundance of nourishment, and Hygeists recommend its use. However, bean-curd is indigestible as in passing through the process of freezing, it undergoes a change. Ordinary bean-curd is not a safe eatable to remove to a distance, as it spoils very readily: therefore, frozen bean-curd only is exhibited here with explanation of the ingredients of the common curd.

Preparation.—It is made by steeping soy beans in water and then grinding them, after which the refuse is removed by boiling and dissolving it in a little oil. This refuse is called "Kiradzu" or "Unohana." The liquid remaining after taking away such refuse is put into a kettle and again boiled. Upon the surface of the water there forms a thin substance like wet paper; this is skimmed off and dried. It is called "Yuba" (lit., bean-curd skin), the taste of which is very agreeable. When it begins to bubble up brine is sprinkled over it in order to stop the bubbles, and is put into a special wooden box, then thrown into a cotton cloth bag and coagulated into long square shapes, which is the bean-curd.

Analysis of Bean curd.

Nitrogen	0·76
Fat	2·36
Water	90·37
Ashes	0·76

Analysis of Dried Bean-curd.

Nitrogen	8·09
Fat	24·50
Ashes	7·99

Analysis of Refuse of Bean-curd.

Albumen	3·664
Fat	0·837
Glucose	0·266
Starch	2·630
Cellulose	2·896
Other non-nitrogenous substances	6·156
Ashes	0·587
Water	85·660

Use.—Bean curd is prepared for eating by boiling it or holding it over a fire; it is usually eaten with soy and various condiments. It easily digests and is suitable food for adults, for infants, or for invalids, but it cannot be preserved for more than a day or two, owing to its perishable nature, whereas frozen bean curd does not easily spoil and can be preserved for a length of time, but it is indigestible and furnishes less nourishment than the unfrozen.

(211.) Yuba (Skin of bean curd).

Preparation.—Yuba is made during the process of making bean curd, and is a thin, yellow, transparent substance.

Use.—It is used as a food adjunct with boiled rice, by most persons, by boiling or warming over a fire and salting it.

Analysis.

Albumen	51·597
Yellow oil	15·620
Cellulose	0·461
Nitrogenous substances	6·651
Ashes	2·821
Water	22·850
Total	100·000

Analysis.

Carbon	2·821	Dry substances 77·15%
Nitrogen	22·850	
Hydrogen	42·024	
Oxygen	8·257	
Ashes	5·868	
Water	18·180	
Total	100·000	

(212.) UNDON (Macaroni).

Preparation.—About 1 *sho* of wheat flour is mixed with 3 *gō* of salt and 4 *gō* of water; it is then kneaded with the hands in a wooden basin, then wrapped in a mat, and flattened out by stepping on it. It is then placed on a board 6 feet square and removed from the mat: it is made still thinner, by rolling it with a round roller of 4 feet in length and 1½ inches in diameter. When it has been rolled into the thickness of ⅛ of an inch and into a disk of 2½ feet in diameter, it is folded into six layers and is cut on a chopping block, and then hung on bamboos and exposed to the sun, after which it can be stored away.

Use.—The kind that becomes soft by boiling and does not fall to pieces is considered the best. When boiled with a cup of sake and a pickled plum (Umeboshi), it becomes very tender and does not fall to pieces. It is washed thoroughly, again put into hot water, and is then ready to be eaten with sauce made by boiling katsuwobushi in water and with the juice expressed from the radish.

Analysis.

Albumen	2·949
Extract by petroleum ether	0·205
Carbo-hydrates	21·817
Glucose	0·726
Ashes	0·823
Water	73·480
Total	100·000

(213.) SOMEN. (Vermicelli.)

Preparation—Wheat (*Triticum vulgare*) is ground into flour. 2750 *momme* of the flour is mixed with the brine made of 1 *sho* of salt to 5 *sho* of water. The paste thus made is placed upon a board, and rolled out, by means of a rod, until it becomes 1 *sun* thick. It is then cut by a knife from the edge to the centre in the spiral form, so as to form a long ribbon. The ribbon is rubbed throughout its entire length with the oil of Sesame (*Sesamum indicum*) and heaped up in a tub for 9 or 10 hours. It is then again placed upon the board, and drawn out by hand into the tub and left for some time. After repeating this drawing process several times, it is stretched between two bamboo sticks, and the sticks fixed upon a stand. After several hours, it is drawn out by taking hold of the bamboo stick, and left for some time and again pulled. By this alternate pulling and rest, it is ultimately drawn out to the length of about 6 *shaku*. It is then hung on a drying stand, and after drying is cut into proper length.

Use.—"Somen" is used as a food adjunct. It is boiled with water; when it becomes soft and swollen the water is drawn off. It may be served while hot with the sauce made of "Shioyu," "Mirin," "Katsuwobushi," &c.; or in hot summer days, it is cooled in cold water and eaten by dipping into the cooled sauce in another vessel.

Analysis.

Albumen	11 154
Extract by petroleum ether	0·875
Glucose	2·360
Dextrin	1·460
Starch, &c.	63·645
Ashes	6·506
Water	14·050
Total	100·050

Analysis.

Carbon	36·199	Dry substances 85·955%
Nitrogen	1·751	
Hydrogen	5·140	
Oxygen	36·355	
Ashes	6·505	
Water	14·050	

The following, 214–223, are the Fruits preserved with Sugar.

(214.) Kum-quat. Kin-kan.

(215.) Persimmon. Kaki

(216.) Large Thick-skinned Orange. Kunenbo.

(217.) Sweet Orange. Mikan.

(218.) Yudzu (*Citrus aurantium*).

(219.) Bitter Orange. Daidai.

(220.) Pear. Nashi.

(221.) Peach. Momo.

(222.) Plum. Andzu.

(223.) Apple. Ringo.

The following (224–227) are the Fruits used in Japan for Jam-making:

(224.) Orange. Daidai.

(225.) Peach. Momo.

(226.) Plum. Andzu.

(227.) Almond.

(228.) Umeboshi (Salted and Dried Plums).

There are two ways of salting plums, one to put three *go* of salt upon one *sho* of plums into a tub of the capacity of four *to* for about 10 days. The plums are turned over and then again put away for a week, when the same process is again gone through. This method of preparation is commonly called Sando-dzuke (literally three times pickling). The other way is to fill a tub with plums and sprinkle over them eight *shos* or a *to* of salt; this is a very simple way of preparation, and is called Ichidodzuke (once pickling). In both of these modes of preparations the plums, after being kept in the brine 30 days, are arranged upon straw mats and exposed to the rays of the sun for seven days. Then Shiso (*Perilla arguta*) is dipped into the juice produced by the mixture of salt and plums and is exposed to the rays of the sun and set aside again for several days, when the colour changes to a beautiful red; it is then exposed to the open air for two nights during which time the sourness will somewhat disappear, and a very delicious flavour will be produced.

Use.—If Umeboshi is preserved in an earthenware jar and sealed up tight, with a thick paper cover, it will keep for over ten years. It is very valuable as a provision in campaigns and on voyages. Moreover, its taste remains unchanged even to the palates of those suffering from high fever or of those whose sense of taste from the same cause has been much impaired: therefore it is kept in almost every house, and is especially used for invalids.

(229.) Miso (a fermented substance made from Soy Beans).

Preparation.—There are many ways of making miso, they do not differ much from each other, and the kind containing the largest quantity of yeast is considered the best. The usual mode is, after soaking soy beans in water for about two hours, to put them into a suitable vessel and steam them; then, after mixing them with salt and yeast (the proportions are one *to* of beans to three *sho* of best salt and one *to* of yeast),

they are removed to wooden plates; the next step is to evenly mix the ingredients. The liquid is then put into casks, and is then left untouched for upwards of a year.

Another method.—Three *to* of yellow soy beans are soaked in water for a night; then they are boiled in a large kettle, and as soon as the water in the kettle has evaporated and the beans show a reddish yellow colour, they are removed to a mortar and pounded; they are then placed on mats. When they are thoroughly cooled, they are shaped into balls, as large as hand balls, cut with a knife into flat pieces about an eighth of an inch thick, and placed on mats shaped like scales of fish. As soon as mould appears upon them, they are taken, crushed into small pieces, and exposed to the rays of the sun for a day or two. When nearly dry, one and a fifth *to* of salt and a suitable quantity of water are added to them, and the whole is pounded in a mortar. After preserving in a cask for twenty or thirty days, it is again pounded thoroughly, and then left in a cask for a month or two, and sometimes longer, when the preceding process will be repeated. Finally, if it is sealed up in casks, it will never deteriorate. It is in prime condition when three years old.

Use.—In Japan miso is one of the most necessary articles of food, and has been used from time immemorial, both by nobles and men of inferior rank. It is made into a soup, and is one of the courses served up as a principal article of every day diet. The mode of making it into soup is, in the first place, to rub it around an earthenware bowl, into which a suitable quantity of water has been poured; it is then filtered through a sieve called *misokoshi*, and vegetables according to taste are added to it; the whole is then boiled and served up. The quantity of water to be used depends on the taste of those who have to eat it. Miso is used to give an agreeable flavour by mixing it with other food, and is then called Miso-ai. There are many other preparations of miso mixed with various condiments, namely, Sansho-miso (miso and Japanese pepper), Shogamiso (miso with ginger), Wasabimiso, Tagarashi-miso, Gomamiso (miso with horse-radish, chillies, and sesame), Keshi-miso (miso with poppy seeds), Katsuwo-miso (miso with Katsuwo), &c.

The uses of miso are innumerable, and it is most nutritious food.

Analysis, by Komaba Agricultural College:—

RED MISO, FROM OSAKA.

Water	50·40
Fibre	8·25
Ashes (containing nearly 12 per cent. of common salt)	12·50
Sugar	0·61
Albumen	10·08
Soluble Carbohydrates	18·16
Total	100·00
Soluble in water	34·71

(229A.) KONOMONO (Vegetables pickled in fermenting mixture of bran and salt).

There are many kinds of Konomono, such as Nukamiso-dzuke (pickled in salt and bran), Takuwan-dzuke (radishes pickled in salt and bran), Shiwodzuke (salted), Shio-oshi (salted and pressed), Kasudzuke (pickled in sake residue), Misodzuke (pickled in miso), &c. The first three are the most common kinds, and are made and kept in almost every house. They all, with the exception of Takuwandzuke and Kasudzuke, would spoil during transit to a distant place, so that these two only have been sent to the Exhibition together with a description of the mode of making them.

Takuwandzuke.—This is prepared by mixing salted dried radishes with rice bran. There are many ways of preparing it: one is to mix three *sho* of salt with seven *sho* of bran which mixture is called Amashiwo; this Takuwandzuke is eaten in the Spring months. Another way is to mix six *sho* of salt with four *sho* of bran, which makes the kind that is used in summer; yet another way is to mix seven *sho* of salt with three *sho* of bran or eight *sho* of salt with two *sho* of bran. Prepared in the last two ways Takuwandzuke can be kept for a period of three years.

The first step is to sprinkle some of the salt and bran upon the bottom of a tub; upon it radishes are arranged, and then again comes a layer of salt and bran with another layer of radishes, and so on until the tub is full. The head is then put on and pressed down by a heavy stone.

(229B.) KASUDZUKE.

To prepare this, white melons are first cut open and the seeds removed with a bamboo spatula, and a small quantity of salt, in the proportion of three *sho* of salt to seventeen large melons, twenty-two medium-sized, or twenty-five small-sized ones, are spread over them. After the juice of the melons has been absorbed into cotton cloth, a mixture of ten *kamme* of sake residuum with three *sho* of alcohol is gradually poured upon the bottom of an empty mirin (236) tub; upon this, the salted melons are laid, then again wine residuum is laid and another layer of melons placed in sake residue and melons until, with seven or more layers of each, the cask is full; it is then headed up, and kept for four or five months before using.

Use.—It is not known how long ago Konomono first came into use, but now-a-days it must be served at the close of every meal, when warm water or tea is drunk. When taken after eating meat or fish, it is very healthy and delicious. Beside, when at breakfast there is only boiled rice and miso soup, and no fish or vegetables, konomono will help to complete the meal. It is also a good accompaniment to a cup of tea.

(230–235.) SHOYU (soy).

Shoyu is a mixture of soy beans, wheat, salt and water; the quantity of soy beans and of wheat being the same. The mode of preparing it, is to thoroughly boil, after washing in a cask with water, 50 koku of beans and to parch about 50 koku of wheat, in a pan for a little while, and thoroughly boil it after grinding on a stone mill. When these two substances are mixed together and kept in Oka-muro (a warm room) for about four days the substances are converted into a yellow flower-like matter, this is yeast. This yeast is then thrown into a mixture of 120 *koku* of water and of 6 *kuwanme* of salt. It is afterwards thoroughly cooled, boiled in a large kettle, and stirred with a bamboo instrument twice a day in summer and once a day in winter. After the lapse of three years the sediment is poured into a bag, then put into a small tub, and is submitted to strong pressure by means of a bar, at the end of which hangs a heavy stone. The fluid expressed is poured into a kettle and submitted to a heat of not more than 80°, it is again removed to a large tub and set away for a night, when it becomes of a deep black colour and acquires a very delicious taste.

Use.—Shoyu is one of the most valuable foods, and is in daily use. Mixed with several kinds of food it imparts to them a delicious flavour. It is universally liked and is really indispensable in the Japanese kitchen. The quantity of shoyu annually consumed in Japan is extremely large, and of late years the article has been exported.

Analysis of Kikkoman Shoyu from Noda (province Shimosa) by Isono Tokusaburo B.Sc. 1,000 c.c. of Shoyu contain following constituents :—

Specific gravity	1·199
Total residue	421·706
Ashes	175·864
Chlorine	94·001
Glucose	53·226
Dextrin	54·710
Alcohol	1·650
Volatile Acid	1·920
Fixed Acid (as SO_3)	13·034
Nitrogen	17·208

The following eight are the chief kinds of Sho-yu :—

1. Shō-ji.
2. Sashimi.
3. Yamasa.
4. Yamajin.
5. Yamada.
6. Yigamisa.
7. Yamadai.
8. Yamataka.

(236.) MIRIN (a kind of sweet liquor).

Preparation.—This is almost the same in every locality of Japan, although there is a difference of proportion in the constituent parts. In the first place, a certain quantity of Koji (rice yeast) glutinous rice and Shochu (spirit from the residuum of

Sake) are mixed in a suitable large vessel, and left untouched for a period of 20 days. It is then stirred every two days with a small wooden stick for 19 or 20 days more, 7 *to* and 2 *shô* of Shochu are added, and then after being set aside for two days longer, it is again stirred in the same way, and this completes the operation. The following are the proportions used in making it at Osaka and Itami :—

	Osaka.	Itami.
Glutinous rice	7·0 koku	9·0 koku
Koji	2·5 „	3·3 „
Shochu	18·40 „	14·0 „
Quantity of Mirin obtained from above	24·00 „	21·0 „

Use.—The usual way of employing mirin is in cooking fish, meat, and vegetables to which it gives a sweetish taste. It is sometimes used as a drink, and is an article of diet indispensable in the Japanese kitchen.

Analysis.

Specific gravity	1·1345
Alcohol	11·5
Extractive matter	37·1
Ashes	0·09
Free Acid ($C_3 H_6 O_3$)	0·04
Glycerine	0·09
Dextrin	trace
Substance which reduces Alkaline copper solution ($C_6 H_{12} O_6$) — before re-action	32·8
Substance which reduces Alkaline copper solution ($C_6 H_{12} O_6$) — after re-action	35·4
Specific rotary power (right)	24·3 degrees

Confectionery.

There are innumerable varieties of confectionery used in Japan. They are all served at tea time. Those especially which are beautiful in appearance are used as presents, or for the entertainment of guests.

(237.) "Higashi" (Dry confectionery).

Preparation.—(1) Baked glutinous rice-meal and sugar. (2) Rice-meal and sugar. (3) Glutinous rice-meal and sugar. These are the materials for making the three varieties of "Higashi," and for decoration, "Beni" (Carthamin), "Awoko" (vegetable green), and curcuma are used.

(*a*) "Daikichisan," "Uchimono," a kind of confectionery made by packing floury mixtures of various colours into moulds and giving them various decorated additions.

Preparation.—Made of glutinous rice-meal, tea-powder, and white sugar.

(*b*) "Oshiukubai."

Preparation.—Made of glutinous rice-meal, white sugar, and plums, and decorated with "Beni" and "Awoko."

(*c*) "Kiono asobi," "uchimono."

(*d*) Kaidzukushi (a collection of shell-fish), do.

Preparation.—Made of white of egg, "Katakuri" (starch of the dog's-tooth violet), and white sugar.

(237A.) Satodzuke.

Preparation.—The ingredients to be used for this article, are boiled with molasses for a sufficient length of time, then taken out and white sugar is sprinkled. The following are the substances to be used :—

"Tenmondo" (*Asparagus*).

Ginger.

"Buddha's hand" (*Citrus medica*, var. *chirocarpus*).

"Yu" (*Citrus aurantium*).

"Konniaku," made of flour of Conophallus Konnyak.

"Renkon" (*Lotus roots*)

"Kinkan" (*Citrus japonica*, var. *fructu globosa*).
Apricot.
Burdock.
Carrot.

(238). KARUYAKI.

Made of glutinous rice meal, and sugar.

(239). OSHIGASHI (Pressed Confectionery).

Made of glutinous rice meal and white sugar, and decorated with "Beni," "Awoko," and "Curcuma."

(*a*) "Seiten no tsuru," "uchimono." A kind of confectionery made by pressing purified rice meal and white sugar into a mould, and giving them various decorated shapes, and afterwards colouring with carthamin, vegetable green, and curcuma.

(*b*) "Suyehiro no ume," do.

(*c*) Red and white peony, do.

Preparation.—This is made of small red pea, dog's-tooth violet starch, sugar and "giuhi." (See No. 240.) If hot water be poured on it, something like chocolate will be produced.

(*d*) "Meikwa uchimono."

(*e*) "Uchimono" of old tiles.

(*f*) "Uchimono" of the cup of Seven Deities.

This is made of the washed meal of glutinous rice and white sugar, and decorated with carthamin, vegetable green, and curcuma.

(*g*) "Unkin," uchimono.

(*h*) "Kiurenkan," do.

Made of the white of egg, white sugar and dog's-tooth violet starch, and flavoured with cinnamon, tea-powder, or lemon oil.

(*i*) "Koshi no Yuki," uchimono.

This is made of frozen "mochi" powder ("mochi" is a tough cake made by pulverizing steamed glutinous rice) and white sugar.

(239A) POCKET "SHIRUKO," (or Portable Shiruko).

(240.) "GIUHI."

Preparation.—Washed glutinous rice meal is mixed with water, and passed through a hair sieve to free it from dust. On first boiling it becomes pasty, it is then mixed with syrup and "midzu-ame" (a kind of malt extract) and boiled for about six hours.

(241.) SEMBEI.

(*a*) "Usuyuki Sembei." Made of glutinous rice meal and sugar.
(*b*) Egg "Sembei." Made of wheat flour, eggs, and sugar.
(*c*) "Misoiri Sembei." Made of wheat flour, "miso," and sugar.
(*d*) "Sanshoiri Sembei." Made of wheat flour, sugar, and Japanese pepper.
(*e*) "Tile Sembei." Made of wheat flour and sugar.
(*f*) "Pea Sembei." Made of wheat flour, sugar, and peas.
(*g*) "Awonoriiri Sembei." Made of wheat flour, sugar, and awonori (sea-weed).
(*h*) "Shiso Sembei." Made of wheat flour, sugar, and Perilla arguta.

(242.) YOKAN, three varieties.

Preparation.—(1) Made of beans, sugar, "Agar-agar," and vegetable green. (2) The same as the 1st, but no vegetable green. (3) "Domiyoji" (steamed and powdered rice), "Agar-agar," and sugar.

(243.) KINGIOKUTO. Made of Agar-agar and sugar.

(244.) KOMPEITO AND ITS KIND.

(*a*) "Kompeito." A thick syrup is made of white sugar, and poppy-seed is thrown into the syrup and stirred, when sugar adheres to each seed as a nucleus, and upon again stirring another coat of sugar adheres, and so on until a tolerably large sweetmeat is formed.

(*b*) "Hōrai mame." These are peas covered with the syrup made of pure sugar.

(*c*) "Kakemono" (a kind of candy). Pure sugar is made into syrup, and with it the following substances are made into sweetmeats:

Walnut.
"Shiso" (*Perilla arguta*).

Tea.
"Mikan" (*Citrus nobilis*).
Apricot.
"Fukiyose" (made of glutinous rice meal).
Beans.
"Yu" (*Citrus aurantium*).

(245.) Dried Persimmon.

(*a*) Produced in the province of Kai.
(*b*) Produced in the province of Owari.

(246.) Midzu-ame (a kind of malt extract).

Preparation.—The history of midzu-ame is not clearly known. However, the first knowledge of it, in Japan, dates far back. The ingredients for its preparation are glutinous rice, millet, wheat, &c. It is offered for sale everywhere under the name of Awa-no-midzu-Ame, and in fact is nothing but the kind prepared from ordinary glutinous rice. The way to make it is to thoroughly steam 1 *to* of rice and mix it in a tub with 2 or 3 *shos* of malt and 3 *to* of hot water of about 120° Fahr. The head is then put on and the tub covered with straw mats in order to keep the substance as warm as possible. After leaving it thus for about 6 hours, it becomes fluid, and will slip through the fingers, leaving on them only the husks of the rice. A basket is plunged into the cask containing the above mixture, and a clear colourless liquid remains which is called Ichiban (the first extract), and is the material from which to prepare the best kind of midzu-ame. The residuum is put into a linen bag and is squeezed out, when a coloured and gummy liquid exudes, called Niban (or the second extract), and is the material from which inferior kinds of midzu-ame are prepared. The process is completed by warming each of these two kinds of liquid in an iron pan at a moderate temperature, filtering them through a hemp bag and squeezing out the residue. It must be kept in a cool place. In the boiling process, strong heat is first used, and in proportion as the watery portions are driven off, and the mixture becomes viscid, the intensity of the fire is reduced so that at the bottom of the pan the mixture will not be thickened and burnt and assume a yellowish colour. As to the Ichiban, it will immediately evaporate, or do so after mixing it with a little alum, and allowing it to settle for a while in order to bleach and for the purpose of removing the dusty matters it contains. By the latter process, a white and transparent midzu-ame is obtained, which is called Sarashi-midzu-ame (bleached midzu-ame).

Qualities.—Midzu-ame is a sweet and agreeable aliment; it aids digestion, is mild and nourishing food, and is principally used for women in childbed, invalids and infants. In Japan, people of both the upper and lower classes, young and old of both sexes, all have liked it from the earliest periods; and it is much used to soothe the sick. Consequently the demand for it equals the quantity produced annually in Tokio which is said to be not less than 260,000 *kin*. However long the best quality is kept, it never turns the least sour, and after the lapse of three years, its viscid nature will be lost and it becomes just like Bintsuke (a kind of pomatum), but when warmed it resumes its former consistency. Of late, there have arisen many manufactures of and dealers in Ame with iron, Kanyu-ame with cod-liver oil, and the various other Midzu-ame.

Analysis.—The percentage composition of Midzu-ame is as follows:—

Constituents.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Albumen	0·784	0·937	1·631	1·759	1·508
Fat	0·053	0·047	0·075	0·039	0·061
Dextrin	36·088	28·955	24·693	35·965	21·911
Maltose	47·920	53·196	56·455	49·085	59·772
Ashes	0·236	0·410	0·528	0·219	0·365
Water	15·364	16·773	17·420	13·309	17·412

Note.—Nos. 1, 2 and 4 are prepared from glutinous rice, while Nos. 3 and 5 are prepared from common rice, both of which are produced in the City of Tokio.

(247.) AME, with chicken meat extract.

This is prepared by boiling Ame with chicken flesh. It is a very nutritious preparation for weak and old persons.

(248.) AME, with iron preparation.

(249.) FROZEN "MOCHI."

Glutinous rice is steamed, pounded in a mortar, afterwards boiled, and frozen by exposure in winter.

Use.—Principally used as a material for making confectionery. When softened, by pouring hot water, and served with sugar, it makes a very delicious food, especially fitted for sick persons.

(250-260.) TOBACCO.

Tobacco is much cultivated in every province of Japan, especially those kinds which are produced at Nagasaki, Higo, and Satsuma are the best. For the detailed account refer to "Yenso-roku" (*see the list of Publications appended*), and other treatises on the subject.

Cut Tobacco.

The leaves of the plant are cleaned, folded, and cut by machinery or by hand. The cut tobacco is used for smoking in pipes (Kiseru) and for making cigarettes as in England.

CLASS III.

Prepared Animal Substances.

Animal food is tinned in the same way as vegetable food. For preservation by vinegar and oil, nothing but vinegar, olive oil, oil of Camellia, &c., are used.

The following (261-273) are the principal kinds shown at the International Health Exhibition :—

(261.) OYSTERS.

(262.) SALMON.

(263.) TROUT.

(264.) LOBSTERS.

(264A.) CRABS.

(265.) ROE OF COD FISH.

(266.) SALMON.

(267.) TURTLE.

(269.) VENISON.

(270.) DRIED ROE OF HERRINGS.

(271.) HERRINGS.

(272.) DRIED CUTTLE FISH.

(273.) SEA-EAR.

(274.) DRIED COD FISH.

Preparation.—The entrails of the cod fish are taken out. The fish is cleaned, then soaked in brine, and dried in the sun.

Use.—The salt is removed by cutting the fish into pieces and soaking in water all night, the fish is then boiled with "soy," sugar, and "mirin," or made into soup and served.

(275.) DRIED SEA-CUCUMBER.

Preparation.—The sea-cucumbers are gutted, cleaned, simmered in a pan until quite dry, then spread upon bamboo mats and dried.

(276.) Dried Shrimps.

Preparation.—Washed with pure water and then boiled with brine and dried.
Use.—They may be boiled or made into soup.

(277.) Katsuwobushi, dried *Bonito.*

Katsuwobushi is made of the *Bonito*, which is caught from July to October, at a distance of 10 to 25 miles out at sea.

Mode of preparation.—It is prepared by drying the fish, after it has been divided into four long strips, with artificial heat. During the process of drying there are many steps to be taken. Katsuwobushi undergoes no change from variations of temperature, and can be preserved for several years. It has been well known, from ancient times, that it is suitable for sea voyages, and for military campaigns.

Use.—To prepare it for eating it is planed into thin shavings with a carpenter's plane; sometimes it is pulverized and then boiled with a moderate quantity of salt. It is used as a condiment with boiled rice to which it gives such a delicious flavour that it suits the palate of every one. It also excites the secretions of the salivary glands and assists digestion. Sometimes it is chewed and swallowed, and it then affords considerable nourishment; moreover, it is an established fact that it allays the pangs of hunger and is stimulating, and the Japanese have great admiration for it.

Analysis of Katsuwobushi.

		Solid.
Albumen (Nitrogen 11·80)	75·60	88·18
Fat	5·11	5·96
Ashes	5·02	5·86
		Dried substance.
Water	14·27	85·73
Total	100·00	100·00
Carbon	41·89	48·86
Nitrogen	11·80	13·77
Hydrogen	5·67	6·61
Oxygen	21·36	24·90
Ashes	5·02	5 86
Water	14·26	—
Total	100·00	100·00

(278.) "Katsuwo-sen."

This is the bye-product of "katsuwobushi" manufacture. The liquor produced in manufacturing "katsuwobushi" is boiled down and seasoned with salt. This is used for flavouring other foods.

(279.) "Uni."

Preparation.—The rough shell of the sea-urchin is crushed, and the flesh may be at once preserved in alcohol, or the flesh may be simply rubbed well and used as food, but that which is salted is more commonly used.

Use.—Served alone or rubbed upon other food, as a piece of bread is buttered.

(280.) Beef "Dembu."

Fresh beef is steamed, disintegrated into a fine dust, boiled with soy of the best quality, and evaporated to dryness. This is used as food for old, young, or sick persons.

(280A.) Beef Extract.

Fresh beef is pounded into a paste, mixed with water, and then pressed. The liquor which comes out is evaporated in a porcelain dish over a water bath, the scum which is formed during the process being removed. This is also called portable soup, and is a very nutritious food.

(281.) Beef "Oboro."

Fresh lean meat is boiled, bones and tendons removed, soaked in a mixture of gravy, pure fat, salt and sugar, and evaporated to dryness, and the mixture again poured upon it and evaporated, the process being repeated several times. It is generally used, and is a nutritious food.

(281A.) Beef "Tsukudani," a kind of boiled beef.

Fresh meat is cut into small pieces, mixed with "mirin," soy, &c., simmered several hours by a gentle heat, and gradually evaporated to dryness. It is generally used as a strengthening food, and also as a portable article for travellers.

Class IV.

Beverages.

(282 288.) Sake (wine).

(Extracted from report of Agricultural and Commercial Department.)

Koji (yeast) is used for brewing Sake in Japan, almost like malt used for brewing beer in western countries, so in the first place the method of manufacturing the yeast and then the brewing of the Sake will be described.

Sake is made everywhere in Japan and the method of brewing it differs more or less in different localities. Itami and Nishinomiya in the province of Settsu, are the chief places where the best Sake is brewed. The method pursued there is more systematic, and the principal processes gone through will now be explained.

The making of Yeast.—In making yeast, the first step is to wash white rice and remove therefrom all impurities; it is then soaked in water until every grain has become swollen, and removed to a vessel for steaming. It is now spread on a straw mat and cooled to about 29° C. in order to harden it. This yeast is mixed with about 4 *to* of rice and 0·2 *go* of yeast, and is removed to a yeast house (a cellar or an underground pit in an ordinary house, surrounded with thick walls); here the mixture is again spread upon mats in a cool place, and is covered with mats, all of which is done by sunset. The next morning, all this is put into a basket, and taken outside of the cellar or pit, spread out again on mats and sprinkled with water, and according to the size of the cover of the yeast, place a certain quantity is put into it and is arranged on the ground under the shelves on both sides of such house, and is removed gradually from these shelves at 5 o'clock the next morning, and the cover of the house placed in such a way as to form a small hill. Between 9 and 10 o'clock P.M., the yeast will gradually form, and when the plumules are intermixed with each other, the inside of the yeast house will be stirred frequently and cause it to be a flat surface, and again form a small hill, and at 1 o'clock in the afternoon, the process of breaking down that hilly collection will be carried out. At 8 o'clock next morning the former process will be repeated, and at 5 o'clock of the fifth day the previous night's work be put into the house cover, and be taken into the house, and so on alternately.

Brewing of Sake.—In Itami and Nishinomiya (province of Settsu), there are great brewers of Sake, and they all follow almost the same method, the various processes of which are as follows:—

1.	The process of the Hon Baizo.	Preliminary process.
2.	„ „ Soye	Chief processes.
3.	„ „ Naka	
4.	„ „ Shimai	
5.	„ „ squeezing and purifying.	

(1.) The materials required for the first process are rice, koji (yeast) and water, the proportions being different in different breweries, but the original liquid, manufactured in accordance with the succeeding mode, is called Ichi-Honbai (the true brewing), in which the proportion of the quantities of rice, yeast and water is as follows:—Rice steamed, 5 *to;* koji (yeast), 2 *to*; and water, 6 *to;* total, 1·3 *koku.*

These three materials are mixed together, then equally divided and put into six tubs, each one holding 2·67 *to*, all lumps in the mixture being crumbled with the hands.

This manipulating process is carried on for two hours, when the mixture is left to itself; twenty-four hours afterwards, the lumps, if there still remain any, are reduced by an apparatus and the mixture becomes perfectly liquid. It is then removed into a

single large tub surrounded by mats in order to prevent the access of cool air. In Nishinomiya, heat is applied to it only one day after it has been mixed up. In Itami, however, it will either be immediately heated with the rest, or it will be heated after five or six days. This process of heating is called Nukume or Daki, and is conducted by putting into the mixture to warm it, a round tube of 1½ *shaku* long, and 1 *shaku* in diameter at one end, and of 8 *sun* at the other, which tube is filled with hot water. The water in the tube is renewed every twelve hours, to thoroughly heat the whole liquid to the same degree, but as the number of times of changing the hot water may differ according to the atmospheric temperature, it cannot be estimated with certainty. In Itami it takes 73 days from the beginning to the end of the brewing, during which period the Nukume will be worked from five to nine days. In Nishinomiya the period is the same, but the Nukume is necessary for from ten to twelve days.

(2) The Soye process.—By the mode employed in Itami, for the Soye process, yeast, rice and water are added to the true brewing which is called Soyedan, or the Soye process, and the proportions are as follows:—

	To
Hon-bai (basis of the brewing)	13·0
Steamed rice	13·0
Koji (yeast)	3·5
Water	13·0
Total	42·5

In Nishinomiya:

Hon-bai	13·3
Steamed rice	1·5
Koji (yeast)	3·5
Water	11·5
Total	38·8

The mixture of these substances is put into a so-called *sanjaku-oke*, a cask of the capacity of 8 *koku*, and is stirred with a proper instrument every two hours; this part of the process requires forty-two hours in Itami, and about three days and three nights in Nishinomiya.

(3) The Naka process.—After the Soye process has been finished, the substance is immediately divided into two equal parts, each of which is put into a sanjaku-oke and rice, koji and water are added. The proportions are as follows:—

The Itami Method:

	To	
Soye	4·25	(the quantity of the ground).
Steamed rice	2·00	
Koji (yeast)	0 65	
Water	3·00	
Total	9·90	

The Nishinomiya Method:—

	To	
Soye	38·8	(the quantity of the ground).
Steamed rice	18·0	
Koji (yeast)	6·0	
Water	24·0	
Total	86·8	

The Naka or middle process requires, as in the preceding process, stirring every two hours. This is done on the one hand to prevent the settling of the rice at the bottom, and on the other to prevent the process of fermentation from stopping. By thus doing for twenty-four hours, the middle process will be accomplished.

(4) The Shimai (last) process.—At the end of twenty-four hours, just before the finishing of the middle process, the basis of the brewing, not yet separated from the liquid, is divided into two equal parts, and are removed to separate casks, and rice, koji and water are added; this process is called Shimai, and the proportions are as follows:—

Itami Method:

	Koku
Naka	9·9 (the quantity of the Ichi honbai).
Steamed rice	3·3
Koji (yeast)	1·0
Water	4·2
Total	18·4

Nishinomiya Method:

	To
Naka	86·8 (the quantity of the Ichi-Honbai.).
Steamed rice	36·0
Koji (yeast)	12·0
Water	62·0
Total	196·8

In this stage the quantity of water may differ according to the purity or impurity of the basis of the brewing. In the first process it is divided equally, and is put into four casks, as in the preceding process, to each of which rice, koji and water are added, and after leaving it quiet for three days, it is put into a so-called Rokushaku-oke, a large tub holding about 25 or 26 *koku*. The fermentation continues for three days longer, but will gradually decrease, and finally die out. The next process is to filter and to purify it. The time this takes is different according to circumstances.

Analysis of several kinds of Sake (quantity by percentage):

Name of Saké Ingredient.	Oiran.	Clear Saké from Uwosaki (Settsu).	Clear Saké from Imatsu (Settsu).
Alcohol (weight) ...	12·0	13·6	9·5
Extractive matter ...	2·83	2·9	2·61
Dextrin	0·22	0·2	0·17
Glucose	0·54	0·62	0·53
Glycerine	0·94	0·8	0·64
Free acid	0·025	0·24	0·30
Fusel oil	—	—	—
Ashes	0·1	0·06	0·05
Specific gravity ...	0·9902(17° C.)	0·9854(27·5° C.)	0·9897(27·5° C.)
Specific rotatory power	+ 1·13°	+ 0·80°	+ 0·64°

(289, 290.) Awamori (strong spirit).

Awamori is a strong spirit and is used for summer drink. The spirit produced at Loo Choo and Satsuma is said to be the best kind.

(291.) Shochiu (strong spirit).

Shochiu is chiefly manufactured by fermenting the saké residuum, &c., and is used as a medicine or for dressing wounds. It is also used for summer drinks.

(292.) Shirozake (white wine).

Shirozake is manufactured by grinding, the glutinous rice which is dipped into water, and then mixed with saké. In appearance it exactly resembles milk: its taste is sweet. This is a drink used especially on the festival called Hinamatsuri, which takes place on the third day of the third month.

(293.) Hōmeishu. "Life-keeping Saké."

There are several kinds of Hōmeishu, and the one now exhibited has a very nice sweet taste; it contains several kinds of medicines and possesses strongly invigorating powers from which it is called Hōmeishu. This is one of the most remarkable productions of Fukuyama in the Bingo province.

(294.) Shisoshu. Liquor flavoured with Shiso (*Perilla arguta*).

It has a sweetish taste, is a mixture of Shiso essence and Saké, and possesses an agreeable and sweet odour.

(295.) Kameno-Toshi. A kind of sweet drink.

It has a sweetish delicious taste, and is a very good stimulant. The manufacturers pretend that it keeps life in full vigour and is conducive to longevity.

(296.) Baishu. A kind of sweet drink.

Its taste and odour are very nice and sweet. It is flavoured with the essence of plum flowers (*Prunus mume*).

(297.) Kikushu. A kind of sweet drink.

Its taste and odour are very sweet and nice. It is flavoured with the essence of chrysanthemum flowers.

(298.) Tokishu. A kind of sweet drink.

It has the same property as Kameno-Toshi, already mentioned. If drunk as a beverage it is said to be a very good remedy for Anæmia.

(300–303.) Japanese Beer.

This is brewed in the same way as in Europe, and has the same properties as the European productions.

(304, 305.) Japanese Wine.

This is made in Japan in the same way as in Europe.

(306.) Vinegar.

The best vinegar is made from oranges. The common sort is made from old Saké. It is used as a food adjunct in the same way as in Europe.

(307–314.) TEA.

Tea is one of the principal productions of Japan, and a large quantity of it is exported to the United States from the ports of Yokohama and Kobe; the amount exported annually during the sixth, seventh and eighth years of Meiji (A.D. 1873–1875) was not less than 23,000,000 pounds. In our country there are many provinces that produce tea, for instance Omi, Kii, Surūga, Iyo, Shinano, Kai, Kadzusa, Shimo-osa, &c. Uji in the province of Yamashiro, however, produces the best.

Use.—In Japan the use of tea dates back to very early times, and at present it is more than ever a popular beverage. Whenever a guest presents himself at a person's house, a cup of tea is at once offered to him, the omission to do this is a breach of politeness. It revives the spirits, it allays the *ennui* incidental to old age, and promotes sociability. Thus it is kept in every house and drunk especially in the morning and evening. In most houses it is the leaf of the tea plant, called Sencha, that is used and not the powdered leaf at all. Powdered tea, Matcha, is usually used only in the houses of nobles and of the rich. A ceremonious system of drinking tea has existed in Japan from very ancient times. A gathering of friends is held in a certain small room of fixed dimensions, in which ground or powdered tea is served to them; this room is called Sukiya and is generally detached from the dwelling-house. Outside and about the room curious and valuable stones and plants are arranged, and inside old tea utensils are displayed, also old scroll pictures and other paintings. At the time of a gathering, various kinds of prepared dishes are placed on low stands before each guest. The host himself prepares Koicho (thick tea) in the presence of his guests and offers a cup of it to all the guests (always five), to be taken in turn, after which Usucha (weak tea) is handed to them. The great point about this tea-room is, not that it be gaudily decorated, but that it be neat and thoroughly clean.

The process of making tea for every-day use does not differ materially from that adopted in England, but in the matter of ceremonious tea drinking, it is necessary that great attention be paid to the selection and preservation of tea, the selection of the water, the arrangement of the utensils, observation of the temperature of the water, and care in the washing of utensils.

Analysis.

Bancha (an inferior kind of tea) produced at Uji.

Water	6·74
Fibre	11·20
Ashes	6·53
Soluble matter	43·26
Tannin	12·50
Nitrogen	5·79

Sencha (a superior kind of tea) produced at Uji.

Water	6·10
Fibre	11·70
Ashes	6·10
Soluble matter	52·55
Tannin	12·10
Nitrogen	6·38

The quantity of Thein contained in it is between 2·5 and 1·35%.

Class VI.

Cookery practically demonstrated.

Japanese Restaurant, situated on the upper floor of the Eastern Arcade, is open daily from 1 P.M. *The* Menu *is as follows:—*

NIPPON RIORIYA.
(Japanese Restaurant).

MENU.

Misoshiru.
Miso Soup (Miso, a fermented mixture of Soy Beans, Wheat and Salt).

Kuchitori.
Side dish.

Hachimono.
Grilled, stewed or roast.

Choku.
Dressed Vegetables.

Han.
Boiled Rice.

Wanmori.
Soup of Fish or Meat with Vegetables.

Sunomono.
Salad.

Konomono.
Vegetables, salted or preserved in Miso.

Sake.
Japanese Wine.

Cha.
Japanese Tea.

Foreign Wines extra.

Sashimi, Sushi, etc.
Very common food in Japan, will be served on special notice.

Japan Tea Rooms are open daily from 11 A.M. *in the Garden of the London Water Companies' Pavilion. There are served to the visitors Japanese Green and Black Tea.*

Class VII.

Poisonous Substances.

(315.) Collection of the Species of Tetradon (poisonous fish).

Drawings of plants which frequently proved to be poisonous in Japan.

(316.) *Aconitum fischeri.* Udzu.

(317.) *Illicium religiosum.* Sikimi.

(318.) *Andromeda japonica.* Asebi.

(319.) *Coriaria japonica.* Doku-utsugi.

(320.) *Ginko biloba.* Ginnan.

(321.) *Rhododendron sp.* Kitsutsuji.

(322.) *Rhus vernicifera.* Urushi.

(323.) *Phytolacca Kaempferi.* Yamagobo.

(324.) *Mucuna capitata.* Hachijo-mame.

Class IX.

Practical Dietetics.

(325) Analysis of the Diets in the Kajibashi Prison of Tokio.

As a basis of this analysis of the food of prisoners, the quantity of food served out as daily rations, *i.e.*, breakfast, dinner, and supper, from the 5th to the 12th June, 1883, in the Kajibashi prison of Tokio, has been taken. There are three classes of prisoners in Japan. (1) those who do no labour; (2) those who do comparatively light work; and (3) those condemned to hard labour. As regards the food of these three classes, there is a difference in the quantity of rice only, no difference whatever being made in any vegetable food eaten with rice.

The average amount of food for one prisoner of the second class is taken as the standard, the other two classes being calculated on that basis.

Boiled rice is the principal food, and it is mixed with wheat in the proportion of 1 part of rice to 1½ of barley, and the quantity supplied daily to each of the three classes of prisoners is as follows:—

4 *gō* to those in Class I.
5 „ „ „ in Class II.
7 „ „ „ in Class III.

Relishes given them with rice being very few in number, their variety at each meal is very small. Misoshiru (soup made of miso) and Takuwan (radishes pickled with salt and rice bran) are given for breakfast, and at the other two meals, viz., at dinner and supper, usually Imogara (the stems of the Taro plant). Kiriboshi (radishes cut and dried), Tangle (*Laminaria saccharina*), broad beans, miso, &c., are substituted for Misoshiru.

The equivalent of 5 *gō* of boiled rice is 1426 grammes, and the weight of 1 *gō* of the same is therefore 285·2 grammes.

The analysis of the quantity of water contained in the boiled rice was spread over six days, and the average quantity of water was found to be 66 (or more exactly 65·993 per cent.), and of solid matter to be 34 per cent. Total quantity of food eaten with the boiled rice was 2380 grammes, and 388 grammes, or 16·7 per cent. of solid matter was obtained after drying.

The following is the average quantity of food by grammes served to each prisoner :—

Classification of Prisoners.	Boiled Rice.	Cooked food eaten with Rice.	Dried Substances.	
			Boiled Rice.	Food eaten with Rice.
Class I.	1140·8	340	387·9	57·
Class II.	1426·0		484·8	
Class III.	1996·4		678·8	

The following six tables show the results of analysis of several other substances :—

Table I. shows the number of grammes of food taken at each of the three meals given to a prisoner at easy labour. (Class II.)

Table II. shows the quantity per cent. of substances (either containing water or not) in the boiled rice.

Table III. shows the quantity per cent. of the substances (either cooked or containing no water) in the food belonging to the boiled rice.

Table IV. shows the quantity of ingredients contained in the whole diet of a day.

Table V. shows the quantity of ingredients contained in the whole cooked food eaten with rice.

Table VI. shows the quantity of ingredients in the daily food of the three classes of prisoners.

As before observed, the prisoners are divided into three classes, and are allowed three meals a day. We have taken the allowance of one prisoner for a week, and have taken that of a prisoner in Class II., the allowance being the same for all, excepting as to the quantity of the principal article of food, that is rice.

N.B.—Improvement of prison system in Japan being one of the most important questions of the present day, especially from the sanitary point of view, the above analysis has been made at the Imperial Sanitary Laboratory, Tokio, by the order of the Central Sanitary Authorities.

I.—Tabular View of the Diet of each Prisoner.

Time of Meals.		Boiled Rice.	Food eaten with boiled Rice.		
			Takuwan.	Miso-siru.	Vegetables.
Breakfast	July 5th, 1882	466·0	18·3	771·7	45·3
Dinner		492·7	19·06	—	45·3 Tangle.
Supper		482·7	18·80	—	57·5 Broad beans.
Breakfast	„ 6th...	467·6	18·3	165·1	
Dinner		486·0	17·73	—	54·9 Cut and dried radish.
Supper		480·6	18·23	—	33·6 Konnyak.
Breakfast	„ 7th...	507·7	19·53	765·	
Dinner		490·7	17·9	—	70·8 Cystoseira and broad beans.
Supper		479·6	15·6	—	31·4 Miso and broad beans.
Breakfast	„ 8th...	466·6	14·8	178·8	
Dinner		497·7	15·26	—	57·2 Cut and dried radish.
Supper		480·0	16·63	—	49·9 Tangle.
Breakfast	„ 9th...	480·0	16·6	173·6	
Dinner		476·0	16·66	—	62·1 Dried stems of Taro plant.
Supper		450·3	18·3	—	78·0 Broad beans.
Breakfast	„ 10th...	450·3	20·6	179·2	
Dinner		473·5	18·6	—	68·4 Cystoseira.
Supper		488·0	18·5	—	81·2 Broad beans.
Breakfast	„ 12th...	456·3	22·5	168·3	
Dinner		491·3	18·6	—	56·7 Burdock and miso.
Supper		420·0	20·3	—	50·4 Soy beans.
Total		9982·2	380·8	7207·7	797·4

II.—Analysis of the Boiled Rice.

Ingredients.			Boiled rice.	Anhydrous Substance.
Cellulose			0·408	1·200
Fat			0·288	0·846
Non-nitrogenous organic matter			29·763	87·539
Albumen			3·124	9·188
Ashes			0·417	1·227
Water			66·000	—
Total			100·000	100·000
Ultimate Constituents.			**Boiled rice.**	**Anhydrous Substance.**
Carbon			15·295	44·985
Nitrogen			0·500	1·471
Hydrogen	(*a*) to combine with other elements	2·112	9·445	6·211
	(*b*) to form water ...	7·333		
Oxygen	(*a*) to form water ...	58·667	74·493	
	(*b*) to combine with other elements	15·826		46·549
Sulphur			0·018	0·052
Phosphorus			0·082	0·239
Chlorine			0·004	0·012
Silicon...			0·026	0·076
Potassium			0·079	0·231
Sodium			0·011	0·036
Calcium			0·008	0·023
Magnesium			0·030	0·088
Iron			0·009	0·027
Total			100·000	100·000

III.—Analysis of the Food Eaten with Boiled Rice.

Ingredients.			Cooked Substance.	Anhydrous Substance.
Cellulose			1·540	9·17
Fat			1·025	6·10
Non-nitrogenous organic matter			6·505	38·72
Albumen			3·580	21·32
Ashes			4·150	24·70
Water			83·200	—
Total			100·000	100·000
Ultimate Constituents.			**Cooked Substance.**	**Anhydrous Substance.**
Carbon			6·117	36·41
Nitrogen			0·573	3·41
Hydrogen	(*a*) to combine with other elements	0·812	10·056	4·83
	(*b*) to form water	9·244		
Oxygen	(*a*) to form water	73·996	79·554	
	(*b*) to combine with other elements	5·548	...	33·022
Sulphur			0·084	0·502
Phosphorus			0·069	0·412
Chlorine			1·906	11·343
Silicon			0·023	0·138
Potassium			0·290	1·729
Sodium			1·178	7·012
Calcium			0·066	0·395
Magnesium			0·121	0·718
Iron			0·013	0·079
Total			100·000	100·000

IV.—Analysis of whole Diet of a Day for Prisoners.

Ingredients.	No Labour.	Easy Labour.	Heavy Labour.
Cellulose	4·654	5·818	8·145
Fat	3·286	4·107	5·750
Non-nitrogenous organic matter	339·536	424·420	594·188
Albumen	35·629	44·549	62·368
Ashes	4·757	5·946	8·325
Water	752·928	941·160	1317·624
Total	1140·800	1426·000	1996·400

Ultimate Constituents.	No Labour.	Easy Labour.	Heavy Labour
Carbon	115·298	218·107	305·350
Nitrogen	5·704	7·130	9·982
Hydrogen (*a*) to combine with other elements	107·749	134·686	188·560
Hydrogen (*b*) to form water ...			
Oxygen (*a*) to form water ...			1487·211
Oxygen (*b*) to combine with other elements	849·836	1062·294	0·353
Sulphur	0·202	0·252	1·625
Phosphorus	0·929	1·161	0·082
Chlorine	0·047	0·058	0·519
Silicon	0·296	0·371	1·568
Potassium	0·896	1·120	0·210
Sodium	0·120	0·150	0·158
Calcium	0·090	0·113	0·597
Magnesium	0·341	0·426	0·185
Iron	0·105	0·132	—
Total	1140·803	1426·000	1996·400

V.—Analysis of whole Cooked Food Eaten with Boiled Rice.

Ingredients.		Cooked Substance.	Anhydrous Substance.
Cellulose	...	5·236	
Fat	...	3·485	
Non-nitrogenous organic matter	...	22·117	
Albumen	...	12·172	
Ashes	...	14·110	
Water	...	282·880	
Total	...	340·000	

Ultimate Constituents.			Cooked Substance.	Anhydrous Substance.
Carbon		...	20·798	
Nitrogen		...	1·498	
Hydrogen (*a*) to combine with other elements		2·761	34·191	
Hydrogen (*b*) to form water ...	282·88	31·430		
Oxygen (*a*) to form water ...		251·450	270·313	
Oxygen (*b*) to combine with other elements		18·863		
Sulphur...		...	0·286	
Phosphorus		...	0·235	
Chlorine		...	6·481	
Silicon		...	0·078	
Potassium		...	0·986	
Sodium		...	4·005	
Calcium...		...	0·224	
Magnesium		...	0·411	
Iron		...	0·044	
Total		...	340·000	

VI.—Analysis of Daily Food of the Three Classes of Prisoners.

Ingredients.	No Labour.	Easy Labour.	Hard Labour.
Cellulose	9·890	11·054	13·381
Fat	6·771	7·592	9·235
Non-nitrogenous organic matter	361·653	446·537	616·305
Albumen	47·811	56·721	74·540
Ashes	18·867	20·056	22·435
Water	1035·808	1224·040	1600·504
Total	1480·8	1766·0	2336·4

Ultimate Constituents.	No Labour.	Easy Labour.	Hard Labour.
Carbon	195·283	238·905	326·148
Nitrogen	7·652	9·078	11·930
Hydrogen (*a*) to combine with other elements	141·940	168·877	222·751
Hydrogen (*b*) to form water ...			
Oxygen (*a*) to form water	1120·149	1332·607	1757·524
Oxygen (*b*) to combine with other elements			
Sulphur...	0·488	0·538	0·639
Phosphorus	1·164	1·396	1·860
Chlorine	6·528	6·539	6·563
Silicon	0·374	0·449	0·597
Potassium	1·882	2·006	2·554
Sodium	4·125	4·155	4·215
Calcium	0·314	0·337	0·382
Magnesium	0·752	0·837	1·000
Iron	0·149	0·176	0·229
Total	1480·8	1766·	2336·4

(325A.) ANALYSIS *of the Diet of Cadets in the Military Academy, Tokio.*

In analysing the food served up to the cadets of the Military Academy, the average quantity served out to each cadet at his three daily meals, (*i.e.*, at breakfast dinner and supper) from the 9th to the 10th month of the 15th year, Meiji (September-October, 1882) has been taken.

The boiled rice and the condiments served up with it have been separately analysed.

The average quantity of rice provided at each meal was, taking an average of ten cases, 584 grammes for each cadet, and the quantity of water therein 63·24 per cent. (the maximum being 63·9 per cent., and the minimum 59·8 %).

Taking the total amount of food given at eighteen meals to one cadet, the total quantity was found to be 4,543 grammes, but after evaporating the water it was reduced to 644 grammes, that is, there was an amount in it of 14·18 % of solid matter.

Under these circumstances, the average proportion of the food for each cadet was found to be such as shown in the following table :—

Boiled rice	1750 Grs. (584×3)	Solid matter	643·3 grammes.
Relishes therewith	757 Grs. ($\frac{1}{18}$×4540·3×3)	„ „	107 3 „
Total	2507 grammes.	Total	750·6 „

The figures mentioned in the table B, represent the quantity of cooked and uncooked food, provided for each of the three meals (each analysed separately), the figures in the fifth column represent the cost of food eaten with boiled rice for a cadet (calculated from the cost of the food in its raw state). The seventh column shows the weight of each kind of aliment cooked, the average rate calculated from the total quantity of food for three cadets, as was mentioned in the preceding pages that is 4540·3 grammes in which 644 or 14·2 per cent. of solid matter is contained The eighth column shows the total quantity of food eaten with boiled rice every meal, and the ninth, the amount of dried substance contained in it, but that is only a very rough calculation. In the exact calculation of dried substances, the analysis was undertaken of each cooked food separately for eighteen meals, and the result obtained was 667 grammes of solid matter from all the foods eaten with the boiled rice. But the actual quantity of dried substance by immediate analysis being 644 grammes, the figures obtained by weighing the water in each food separately cannot be relied on, and the insertion of such a number here is done with the object of showing the accuracy of the preceding number. However, as both numbers are alike, it may be assumed that there is no mistake in the latter number.

The following tables show the results of several analyses of the food :—

Table I. shows the percentage composition of rice (both boiled and dried).

Table II. shows the percentage composition of relishes (both cooked and dried).

Table III. shows the composition of boiled rice, 1750 grammes (in which 643 grammes of dry substance is contained) being eaten per day.

Table IV. shows the quantity of the substances contained in 757 grammes of the food belonging to boiled rice, eaten every day (which contains 107·34 grammes of dry substance.)

Table V. shows the quantity of substance contained in the whole dried food of each day (2507 grammes in which 750 64 grammes was dry substance.)

A.—Prices of Food per Kilogramme.

Name of Food eaten with boiled Rice.	Sen.	Rin.	Name of Food eaten with boiled Rice.	Sen.	Rin.
Radish	2	0	Carrots	4	7
Miso	4	8	Katsubushi	80	0
Connyaku...	3	5	Lotus roots	1	0
Beef	45	3	Japanese potatoes ...	1	0
Soy	9	3	Thynnus macropterus (Maguro) ...	23	0
Sugar	27	3	Bean curd	3	0
Pickled Radish	5	3	Scomber pneumatophonus (Saba)	17	0
Onion	4	0	Dioscorea Japonica ...	3	7
Pickled rape	1	6	Spinach	7	0
Sweet potatoes	3	75	Chrysophrys major (Tai) ...	40	0
Trachurus trachurus (Aji) ...	22		Roasted bean curd ...	3	9
Burdock	7	0	Aralia pinnatifolia ...	8	5
Chatöessus punctatus (Konoshiro) ...	13	6	Gigartina (Ogo)	2	2
Dried stems of Japanese Yams	7	5			
Bonito (fish) (Katsuwo)	20	3			

B.—Tabular View of the Diet of Cadets in the Military Academy, Tokio.

Time of Meals.	Materials of Food eaten with boiled Rice.	Quantity of Uncooked Food. (Kilogrammes.)	Number of Students.	Cost of Food eaten at each Meal (Sen.)	Names of Cooked Food.	Quantity of Cooked Food. (Grammes.)	Quantity of Food eaten with Rice. (Grammes.)	Dry Substances contained in Food eaten with Rice. (Grammes.)
Supper	Bean curd	28·8	...	...	Tofu	63·4		
	Bonito	29·8	...	...	Katsuwa	78·2		
	Shoyu	12·5	322	2·78	.....	...	171·9	52·2
	Sugar...	1·8						
	Pickled radish	9·4	...	...	Takuwan	30·3		
Breakfast	Bean curd	13·4	...	...	Sumashi-siru ...	390·0		
	Onion	6·7						
	Carrots	7·6	320	7·81	.....	...	434·7	21·5
	Shoyu	8·8						
	Katsubushi	4·6						
	Pickled radish	14.5	...	...	Osaka-dzuke ...	44·7		
Dinner	Beef	17·1	...	...	.....	110		
	Lotus roots	10·3	...	...	Nishime			
	Shoyu	9·7	322	2·98	.....	...	113·2	53·5
	Japanese potatoes	13·6						

	Sugar	1·4						
	Pickled vegetables... ...	7·4	...	...	Takuwan	23·2		
Dinner	Thynnus macropterus ...	42·6	...	...	Maguro	113·0		
	Radish	5·4						
	Gigartina	4·5	323	3·79	Daiko-oroshi ...	15·5	182·8	55·5
	Shoyu	19·7	...	...	Ogo	24·0		
	Pickled vegetables	9·6	...	...	Takuwan	30·3		
Supper	Thynnus macropterus ...	11·7	...	...	.....	323·0		
	Bean curd	15·2	...	...	Miso-siru			
	Konnyaku	4·2						
	Carrots	10·5						
	Radish	36·6						
	Miso	28·8	323	2·13	.....	...	372	29·8
	Onion	8·5						
	Japanese potatoes	10·0						
	Shoyu	2·0						
	Osaka-dzuke	15·8	...	...	Osaka-dzuke ...	49·0		
Breakfast	Miso	18·5	...	...	Miso-siru	327·0		
	Radish	32·8	320	0·56	.....	...	364·5	26·8
	Pickled radish	16·2			Shindzuke-daikon	37·5		

Time of Meals.	Materials of Food eaten with boiled Rice.	Quantity of Uncooked Food. (Kilogrammes.)	Number of Students.	Cost of Food eaten at each Meal. (Sen.)	Names of Cooked Food.	Quantity of Cooked Food (Grammes.)	Quantity of Food eaten with Rice. (Grammes.)	Dry Substances contained in Food eaten with Rice. (Grammes.)
Dinner	Konnyaku	30·5						
	Beef	15·2	...	...	Giu-niku	114·0		
	Shoyu	6·8	322	2·85	.....	...	140·0	33·7
	Sugar	0·5						
	Pickled radish	9·3	...	...	Takuwan	26·0		
Breakfast	Miso	20·1	...	...	Miso-siru	327·0		
	Onions	12·0	320	0·53	.....	...	356·0	25·1
	Pickled radish	12·6	...	...	Shindzuke-daikon	29·0		
Supper	Sweet pototoes	12·8	...	...	Satsuma-imo ...	72·0		
	Trachurus trachurus ...	21·6	...	...	Aji...	52·5		
	Shoyu	10·2	...	...	.....	...	149·6	42·5
	Sugar	1·1	216	1·16				
	Pickled cabbage	2·8	...	...	Nadzuke	13·1		
	Pickled radish	2·6	...	...	Takuwan	12·0		

Dinner	Beef	15·6			Giu-niku	130·6	170·2	55·9
	Burdock	18·4	324	2·88	Go-bō			
	Shoyu	8·0						
	Sugar	0·5						
	Pickled Cabbage	9·7			Nadzuke	39·6		
Supper	Chatoessus punctatus ...	31·3			Konoshiro	41·4		
	Dried stems of Jap. Yams...	12·7			Imogara	37·1		
	Shoyu	8·0	322	2·00			124.5	37.8
	Sugar	1·4						
	Pickled cabbage	10·2			Nadzuke	26·0		
Breakfast	Onions	23·2			Sumashi-siru ...	291·0		
	Shoyu	10·3	322	0·66			325·0	12·3
	Pickled radish	13·0			Shindzuke-daikon	34·0		
Dinner	Scomber pneumatophonus...	25·2			Saba	63·0		
	Dioscorea	20·8			Yatsugasira ...	55·5		
	Shoyu	10·8	324	2·06			167·5	52·7
	Sugar	1·2						
	Pickled vegetables	17·9			Osaka-dzuke ...	49·0		

Time of Meals.	Materials of Food eaten with boiled Rice.	Quantity of Uncooked Food. (Kilogrammes.)	Number of Students.	Cost of Food eaten at each Meal. (Sen.)	Names of Cooked Food.	Quantity of Cooked Food. (Grammes.)	Quantity of Food eaten with Rice. (Grammes.)	Dry Substances contained in Food eaten with Rice. (Grammes.)
Supper	Radish	70·5			Miso-siru	390·0		
	Carrot	3·7						
	Bean curd	16·5	322	1·11			444·6	67·4
	Japanese potatoes	7·6						
	Miso	25·6						
	Pickled vegetable	16·0			Osaka-dzuke ...	54·6		
Breakfast	Radish	28·0			Miso-siru	330·0		
	Miso	17·0	322	0·49			369·0	29·5
	Pickled cabbage	10·3			Nadzuke	39·0		
Dinner	Chrysophrys major	15·8			Tai	62·2		
	Spinage	9·4			Hōrenso	43·5		
	Shoyu	7·5	220	3·59			145·7	29·1
	Sugar	0·5						
	Pickled cabbage	6·6			Nadzuke	40·0		

Supper	Trachurus trachurus ...	19·1			Aji	40·0		
	Roasted bean curd	27·7			Yaki-dōfu	69·0		
	Sugar	0·8	322	170			135.1	25·5
	Shoyu	—						
	Pickled radish	13·3			Shindzuke-daikon	25·5		
Breakfast	Miso	19·3			Miso-siru	320·0		
	Radish	20·1						
	Aralia pinnatifida	6·3	317	0·70			354·0	19·7
	Pickled radish	17·1			Shindzuke-daikon	34·0		
	Total	971·2	5283	33·7		4540·3	454·03	667·2

I.—Analysis of the Boiled Rice.

Ingredients.	Boiled Rice.	Dried Substance.
Fibrin	0·171	0·466
Fat	0·120	0·326
Non-nitrogenous organic matter	33·451	90·997
Albumen	2·751	7·500
Ashes	0·261	0·72
Water	63·240	—
Total	100·	100·

Ultimate Constituents.			Boiled Rice.	Dried Substance.
Carbon			16·511	44·916
Nitrogen			0·441	1·200
Hydrogen	(*a*) to combine with other elements	2·282		6·207
	(*b*) to form water	7·027	9·309	
Oxygen	(*a*) to form water	56·213	73·580	
	(*b*) to combine with other elements	17·367		47·244
Sulphur			0·013	0·035
Phosphorus			0·062	0·169
Chlorine			0·003	0·007
Silicon			0·006	0·015
Potassium			0·046	0·126
Sodium			0·006	0·016
Calcium			0·003	0·008
Magnesium			0·020	0·057
Total			100·	100·

	Carbon. Per cent.	Hydrogen. Per cent.	Nitrogen. Per cent.
Albumen	53·	7·	16·
Carbo-hydrates	44·5	6·17	—
Fat	74·	11·	—

II.—Analysis of the Food eaten with Boiled Rice.

Ingredients.	Cooked Food.	Dried Substances.
Fibrin	0·731	5·160
Fat	1·528	10·780
Non-nitrogenous organic matter	4·698	33·124
Albumen	4·600	32·440
Ashes	2·623	18·496
Water	85·820	—
Total	100·	100·

Ultimate Constituents.				Cooked Food.	Dried Substances.
Carbon				6·587	46·450
Nitrogen				0·736	5·190
Hydrogen	(*a*) to combine with other elements	0·812		10·348	5·729
	(*b*) to form water	85·820	9·536		
Oxygen	(*a*) to form water		76·285	79·939	
	(*b*) to combine with other elements	3·654			25·755
Sulphur				0·077	0·545
Phosphorus				0·070	0·493
Chlorine				1·164	8·239
Silicon				0·014	0·098
Potassium				0·188	1·320
Sodium				0·742	5·234
Calcium				0·057	0·400
Magnesium				0·068	0·477
Iron				0·010	0·070
Total				100·	100·

III.—Analysis of the Boiled Rice (1750 grammes).

Ingredients.			Boiled Rice.	Dried Substance.
Fibrin			2·99	
Fat			2·10	
Non-nitrogenous organic matter			586·88	
Albumen			48·25	
Ashes			3·08	
Water			1106·70	
	Total		1750·00	643·3

Ultimate Constituents.				Boiled Rice.	Dried Substance.
Carbon				228·94	
Nitrogen				7·72	
Hydrogen	(*a*) to combine with other elements		39·93	162·90	
	(*b*) to form water	1106·7	122·97		
Oxygen	(*a*) to form water		983·93	1287·65	
	(*b*) to combine with other elements				
Sulphur				0·22	
Phosphorus				1·09	
Chlorine				0·05	
Silicon				0·10	
Potassium				0·81	
Sodium				0·10	
Calcium				0·05	
Magnesium				0·37	
	Total			1750·00	

IV.—Analysis of Food (757 Gr.) eaten with Boiled Rice per day.

Composition.			Cooked Food.	Dried Substances.
Fibrin...			5·53	
Fat			11·57	
Non-nitrogenous organic matter			35·56	
Albumen			34·82	
Ashes			19·86	
Water			649·66	
Total			757·00	107·34
Ultimate Constituents.			**Cooked Food.**	**Dried Substances.**
Carbon			49·86	
Nitrogen			5·57	
Hydrogen	(*a*) to combine with other elements	6·15	78 34	
	(*b*) to form water ...	72·19		
Oxygen	(*a*) to form water ...	577·47	605·13	
	(*b*) to combine with other elements	27·66		
Sulphur			0·58	
Phosphorus			0·53	
Chlorine			8·82	
Silicon			0·11	
Potassium			1·42	
Sodium			5·62	
Calcium			0·43	
Magnesium			0·51	
Iron			0·08	
Total			757·00	

V.—Analysis of whole Food for Cadets in the Military Academy.

Ingredients.	Boiled Rice and the Food belonging to it.	Dried Substances.
Fibrin	8·52	
Fat	13·67	
Non-nitrogenous organic matter	622·44	
Albumen	83·07	
Ashes	22·94	
Water	1756·36	
Total	2507·00	750·64

Ultimate Constituents.				Boiled Rice and the Food belonging to it.	Dried Substances.
Carbon				338·80	
Nitrogen				13·29	
Hydrogen	(*a*) to combine with other elements	46·18			
	(*b*) to form water ...	1756·36	195·16	241·24	
				1892·78	
Oxygen	(*a*) to form water ...		1561·20		
	(*b*) to combine with other elements	331·58			
Sulphur				0·80	
Phosphorus				1·62	
Chlorine				8·87	
Silicon				0·21	
Potassium				2·23	
Sodium				5·72	
Calcium				0·48	
Magnesium				0.88	
Iron				0·08	
Total				2507·00	

(326.) Report on Kakke in its Relation to Food by the Surgeon-General of the Japanese Imperial Navy.

Kakke is a disease that has prevailed in the Navy every year, since the establishment of the Naval Department by the Japanese Government, and the patients have mostly recovered, but some of them suffered for a lengthy period, and became so emaciated that they could not perform their duties for a considerable time, while others again did not recover their health, and became invalids for life, some too died of the disease. In this way, the disease has been a great misfortune to the navy. It was finally determined by the diagnosis of several cases, that this disease originated either from unwholesome or insufficient nutriment, or from improper apportionment of food. On the 19th day of the 12th month, 1882, a Japanese man-of-war, the "Riujo," sailed for Hawaii viâ Wellington, N.Z., Valparaiso and Callao, carrying 378 persons, of whom 15 were naval officers, 34 their assistants, 27 cadets, and 302 sailors. So many cases of Kakke broke out on board, *specially among the sailors*, that on arrival at her destination, after a run of 197 days from Shinagawa, hardly any hands were able to work the ship. Consequently the diet was altered, while the ship lay at anchor, and the cases of Kakke gradually diminished, and on the 15th Sept., 1883, she could resume the voyage and return to Shinagawa. His Excellency the Minister of the Navy was greatly distressed when he heard the statement of the miserable condition the men had been in, and appointed a special committee to examine into the matter, which committee began its labours in November of the same year. Before the investigation was completed it was evident, by inspecting the tables drawn up by the committee, that the cause of the disease was either the unwholesome character or the insufficiency or improper apportionment of the rations.

Diagram I. shows the quantity of food provided daily for sailors, naval cadets and officers and their assistants during the voyage of 190 days from Shinagawa to Honolulu. There was no difference in the quantity of boiled rice given to each of them, but the quantity of animal food, fish, vegetables, &c., given to the sailors was smaller than that given to the officers. The last column indicates the average quantity of all kinds of food for each day issued to all ranks.

Diagram II. shows the comparative quantity of food provided daily for sailors, cadets, officers and assistants for the return voyage of 74 days from Honolulu to Shinagawa. In comparison with Table I. there is a great decrease both in the quantity of rice and in the number of persons, the decrease in sailors being not less than half of the whole number; however, there was an increase of thirteenfold in the quantity of steamed mochi and of fourfold in the quantity of animal food, and again a large increase in the quantity of steamed mochi and animal food for naval cadets and others. The quantity of fish decreased and that of vegetables increased in each case. The quantity of fruit was smallest for the sailors, next in order came cadets, then assistants, while the officers had a large supply. The last column shows the average total for each day, the quantity being very small for sailors and gradually increasing for assistants, cadets, and officers.

Diagram III. shows the comparative quantity of food provided for sailors, cadets, assistants and officers, during the whole voyage of 271 days. The quantity of rice is large for the sailors, and there is a gradual decrease for cadets, officers, and assistants. Similarly with regard to steamed mochi. Just the reverse was the case with animal food which was smallest for sailors, and gradually increased for the various ranks of naval officers. The comparison with respect to fish, vegetables and fruits, are the same as the ratio of animal food. The last column shows the average total of each day.

Diagram IV. shows the comparative quantity of rice provided for sailors, cadets, assistants and naval officers for each day, (dividing the whole number of days of navigation into 38) during each period, the quantity being largest for sailors, taking the average number on the last day of each period, and there was a gradual decrease for cadets, naval officers, and the assistants in their respective order.

Diagram V. shows the comparative quantity of steamed mochi (dividing the number of days in the same way as in the Table IV.) provided every day of each period. It is generally smallest for sailors, and there was a gradual increase for cadets, assistants, and naval officers, in the order named.

Diagram VI. shows the comparative quantity of animal food, (dividing the number of days as above) provided every day of each period; it is generally smallest for sailors, and there was a gradual increase for cadets, assistants and naval officers, as named.

Diagram VII. shows the comparative quantity of fish (dividing the number of the days as above) provided every day of each period; it is generally smallest for sailors, but there was a gradual increase for cadets, assistants and naval officers, as named.

Diagram VIII. shows the comparative quantity of vegetables (dividing the number of the days as above) provided every day of each period; it is generally smallest for sailors, but there was a gradual increase for cadets, assistants and naval officers, in the order named.

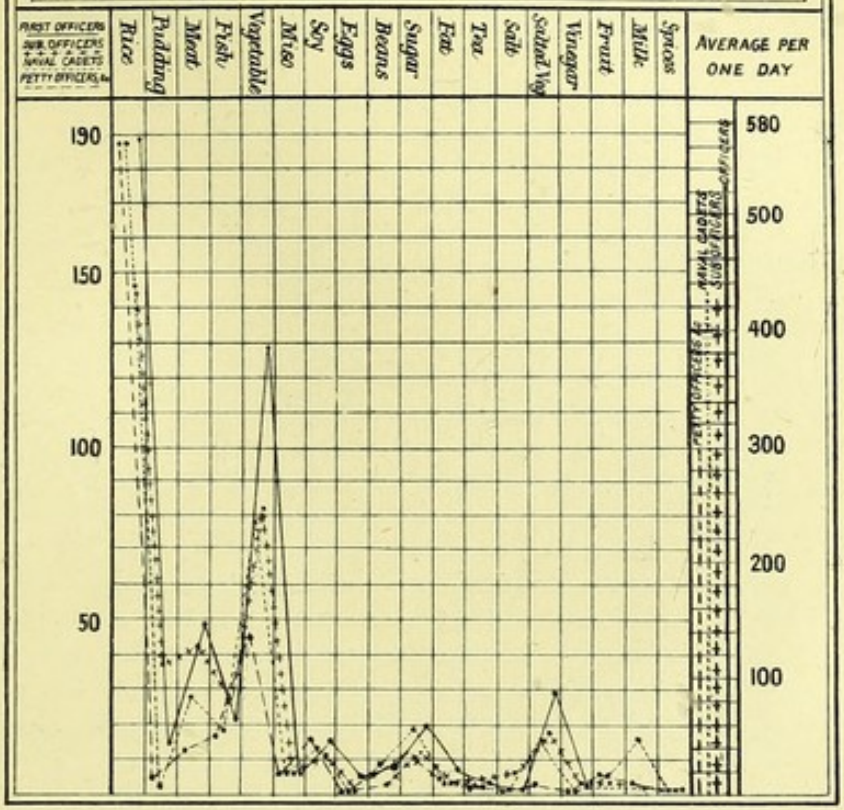
Diagram IX. shows the comparative total of the quantity of food (dividing the number of the days as above) provided for sailors, cadets, assistants and naval officers every day of each period. The result shown is the same as in the previous table.

Diagram X. shows the comparative average number of daily deaths to each hundred cases (dividing the number of the days as above) of patients among officers and crew every day of each period; the number was largest among the sailors. The mortality especially increased from the 25th period, and in the 29th period, the last but one before the port of Honolulu was reached, the number of deaths arrived at the maximum; it decreased, however, in the following periods.

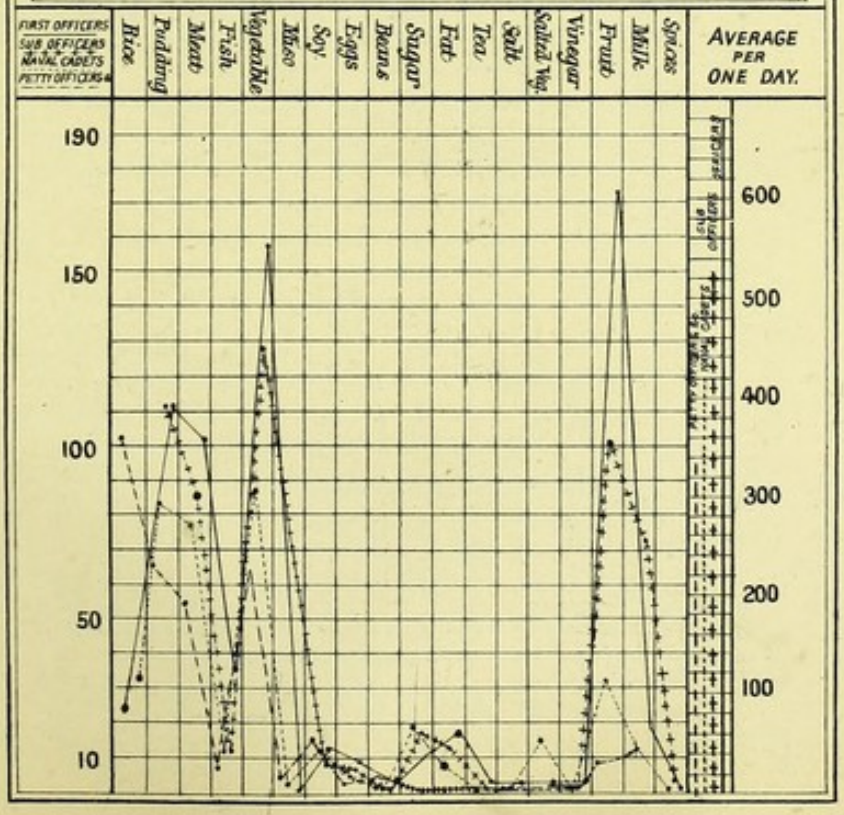
Note.—In the Diagrams the line – – – – represents the sailors; ..... the cadets; + + + + the sub-officers; and ——— the officers; the blank lines represent the periods for which there was no account taken, and the lines -|-|-|-|-|- the periods when food was not offered.

between page 58 and 59

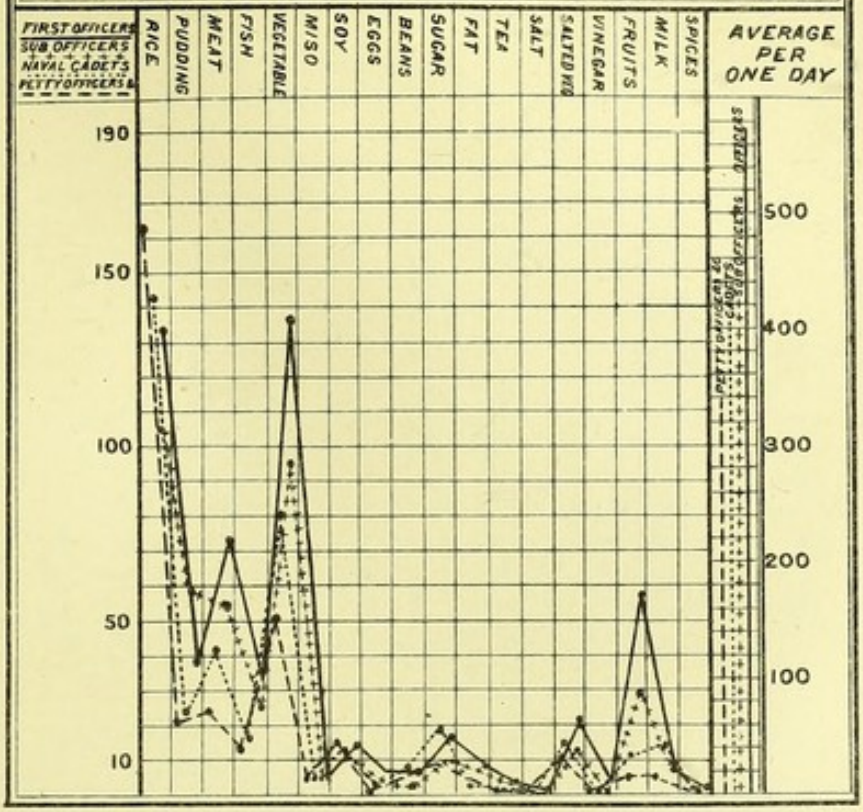
I DIAGRAM SHOWING THE QUANTITY OF FOOD CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS, &c., ON BOARD TRAINING SHIP "RIUJO" DURING THE VOYAGE FROM SHINAGAWA TO HONOLULU.



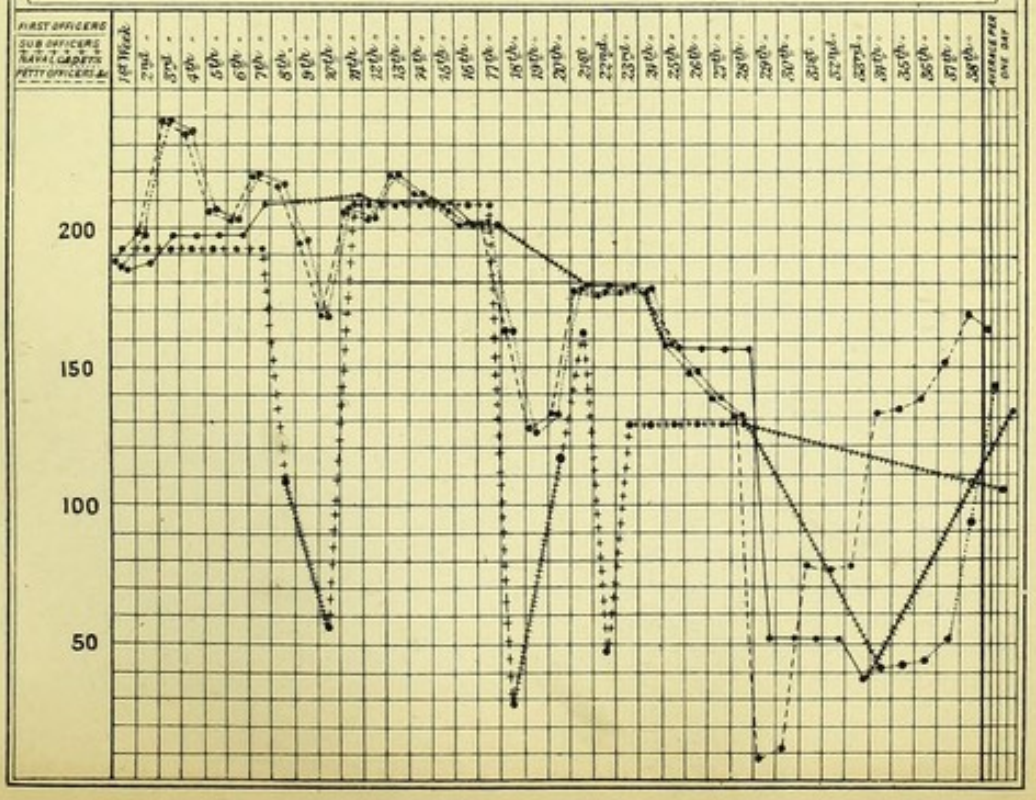
II DIAGRAM SHOWING THE QUANTITY OF FOOD CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS, &c. DURING THE VOYAGE FROM HONOLULU TO SHINAGAWA.



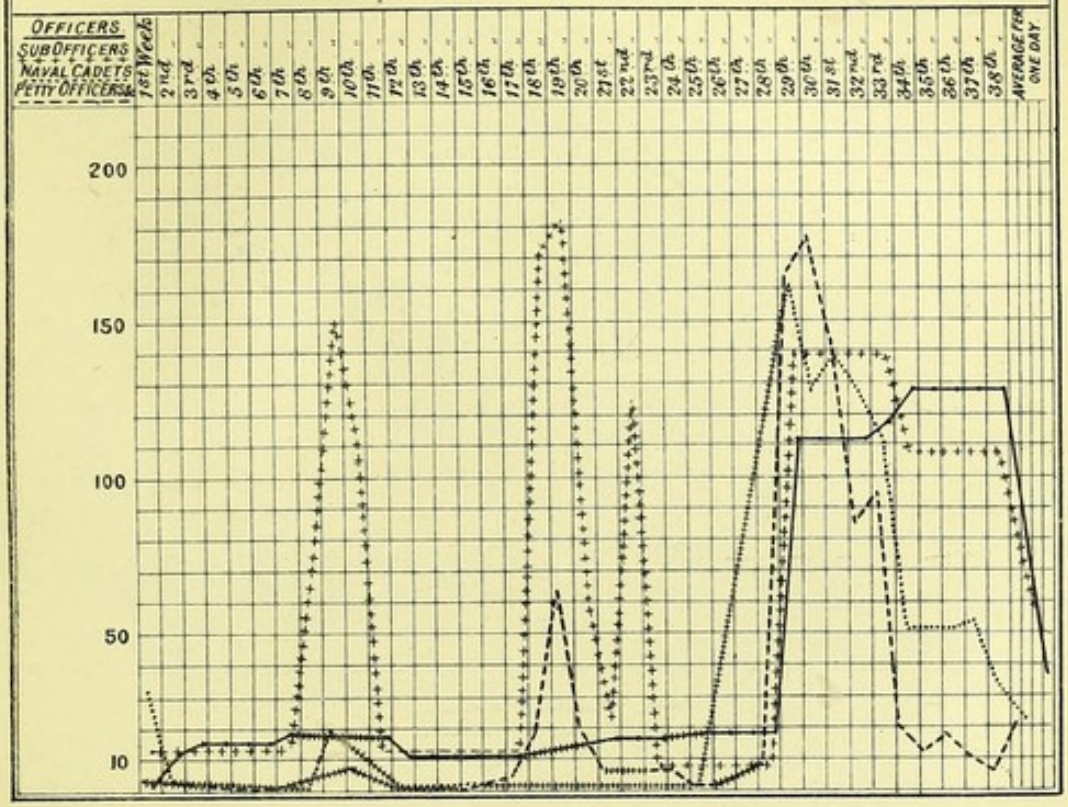
III DIAGRAM SHOWING THE QUANTITY OF FOOD CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS &c. ON BOARD TRAINING SHIP RIUJO, DURING THE WHOLE VOYAGE.



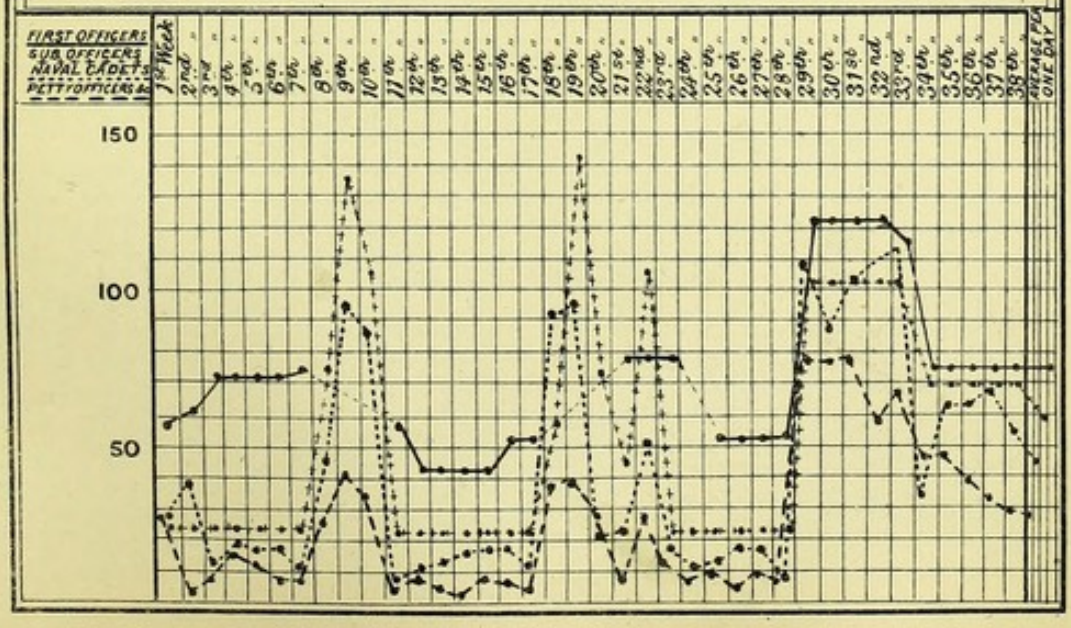
IV DIAGRAM SHOWING THE QUANTITY OF RICE CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS, &c. ON BOARD TRAINING SHIP "RIUJO" DURING THE WHOLE VOYAGE.



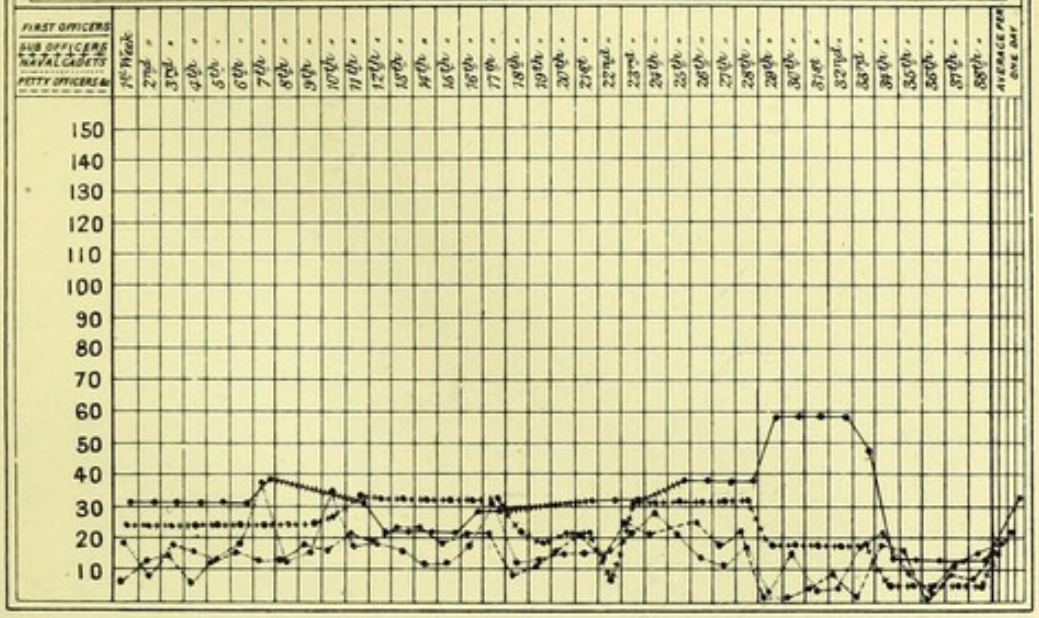
V. DIAGRAM SHOWING THE QUANTITY OF STEAMED MOCHI CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS &c. ON BOARD TRAINING SHIP "RIUJO" DURING THE WHOLE VOYAGE.



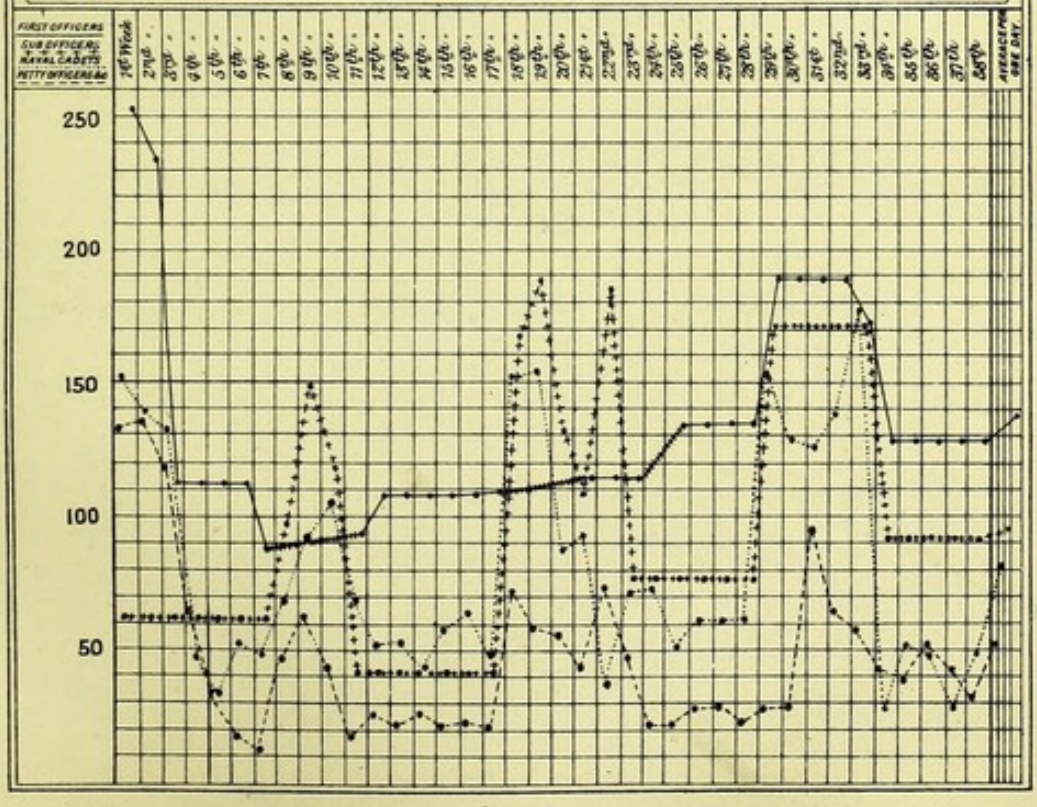
VI. DIAGRAM SHOWING THE QUANTITY OF MEAT CONSUMED BY OFFICERS, CADETS, PETTY OFFICERS, &c. ON BOARD TRAINING SHIP RIUJO, DURING THE WHOLE VOYAGE



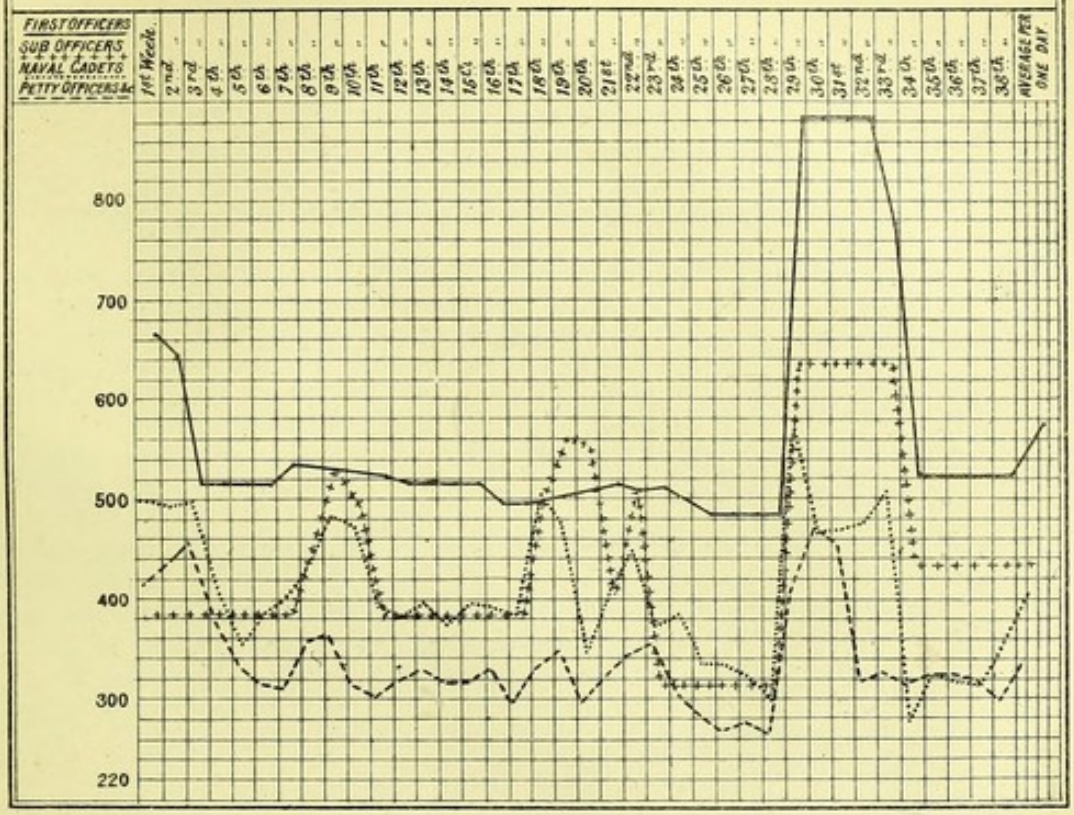
VII DIAGRAM SHOWING THE QUANTITY OF FISH CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS, &c. ON BOARD TRAINING SHIP "RIUJO" DURING THE WHOLE VOYAGE.



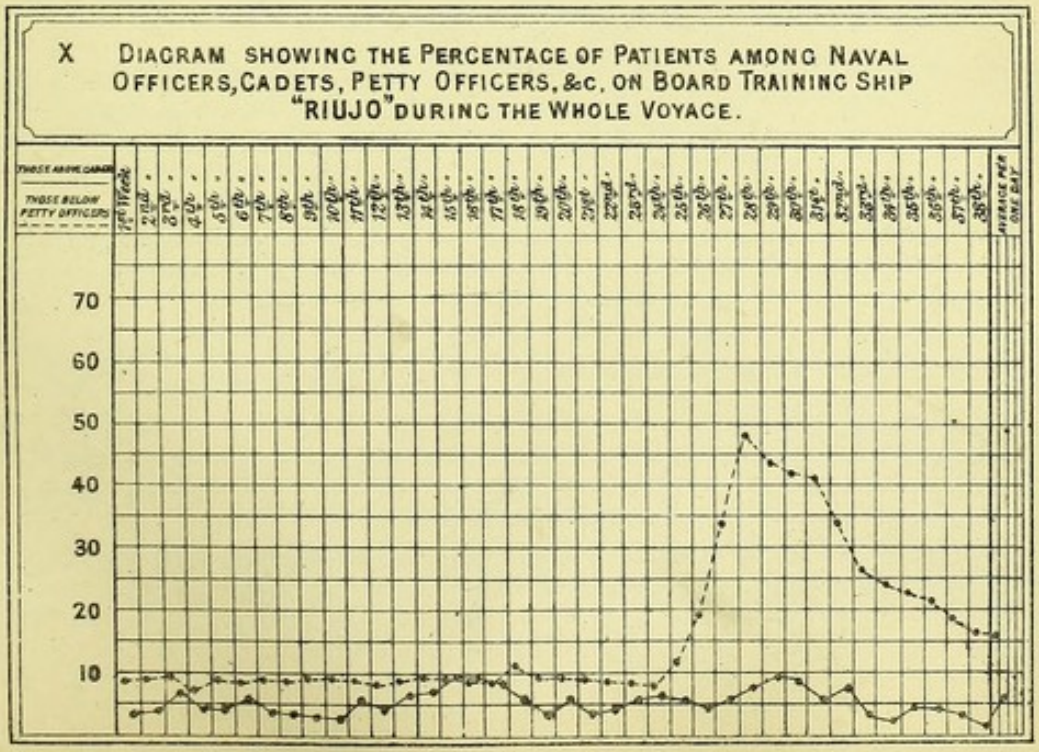
VIII. DIAGRAM SHOWING THE QUANTITY OF VEGETABLE FOOD CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS, &c. ON BOARD TRAINING SHIP "RIUJO" DURING THE WHOLE VOYAGE.



IX DIAGRAM SHOWING THE TOTAL QUANTITY OF FOOD CONSUMED BY NAVAL OFFICERS, CADETS, PETTY OFFICERS &c ON BOARD TRAINING SHIP "RIUJO" DURING THE WHOLE VOYAGE.



X DIAGRAM SHOWING THE PERCENTAGE OF PATIENTS AMONG NAVAL OFFICERS, CADETS, PETTY OFFICERS, &c. ON BOARD TRAINING SHIP "RIUJO" DURING THE WHOLE VOYAGE.



Class XI.

Kitchen Utensils.

(327.) Haicho (A safe to protect food from flies).

Haicho is a kind of long side-board made of cedar, having four pillars in the corners, likewise of cedar, its upper and lower sides as well as the back are boards; its height and breath 2½ *shaku* each and its thickness is 1⅕ *shaku*. The three sides are fitted with iron wire net, to which also a net of red thread is attached. In the front there are sliding doors. Some of these safes have drawers in the lower part and others have not.

This is a piece of furniture to keep food in to prevent its decomposition, and especially for keeping off flies, from which circumstance the name Haicho is derived.

(328.) Nedzumi-iradzu (A safe to protect food from rats).

This is a somewhat larger kind of the above; its height is 4 *shaku* and its breadth is 3 *shaku*; the three sides are of board, but in the front side there are 5 drawers and 4 doors.

This is also used to keep food in, and especially for protecting it from rats, hence its name Nedzumi-iradzu.

(329.) Meshibitsu (Tub for carrying boiled rice in).

This is made of Sawara (*Chamaecyparis pisifera*) or it is sometimes made of pieces of cedar wood, and is fitted with two hoops of copper. This is one of the utensils used to keep rice in.

(330.) Meshibitsu-ire (Cover for putting Meshibitsu in).

(331.) Caddy of Tin (tea case).

It is made into the form of a jar with inside cover, having a hole in the centre, and a cover is furnished to prevent the odour of the tea from escaping.

(332.) Ditto of Kiri (the wood of *Paulownia Imperialis*).

It is made of the Kiri in the form of a box, inside of which another smaller box with a hole is put. Used to keep tea in.

(333.) Ditto of Ikkwanbari (paper).

This is made in the form of a cylinder with paper pasted with the starch from Warabi, and its grey colour is produced by applying to it the sap of persimmons. The cover is made in the same way. This is also used to keep or preserve tea in.

This was invented by a Chinaman called Mine Ikkwan who named it after the locality where he lived. His successors have been the manufacturers of this article, which was afterwards called Ikkwanbari.

(334.) Caddy (tea case) of tinned iron.

Tin plate is cut into fixed sizes by scissors, and is stretched by rolling it to a round bar and then hammering it; it is then made into the form of a tube, on which tin is put by melting it with turpentine oil on to both extremities of the tube, round plates of the same kind of tin. This is simply for keeping tea.

(335.) Okamochi (a tub for carrying food in).

It is made of fir tree, in the form of a shallow tub with cover and a handle so as to be easily carried, the depth is about 3 *sun*; it is fitted with two copper hoops.

(336.) Handai (a tub for carrying fish).

This is made with the same material, and two copper hoops are put on. Its shape is oval, and it has no handle, so that a number of them can be piled up.

(337.) Jar.

It is wide in the top and narrow at the bottom. It is used to put vegetables in, or to prepare salted food.

(338.) Saké Cask.

This is a wooden cask on which many bamboo hoops are put; the whole body is lacquered. This is used to put in Saké on the occasion of a celebration or for decoration.

GROUP II.—DRESS.

Class XIII.

Dress, National Costume, &c.

Ancient Court Costumes (No. 1–57).

Sokutai (a particular form of court costume.)

Sokutai is its proper name, but it is also called *Cho-fuku*, *Chō-i*, and *Hiru-Shō-zoku*.

The origin of *Sokutai* may be traced to the reign of the Emperor Temmu (673–686 A.D.). Though there is no means of obtaining a precise knowledge of such an ancient institution as this form of dress, yet from what has been recorded in history it may be supposed that on all solemn occasions downwards from the grand ceremonial of *Taigi*, *Reifuku*, or holiday clothes were generally worn. *Reifuku* has now followed the fashion of *Zui* and *Tō*, and therefore very little of its original form remains and the form of dress which corresponds with *Soku-tai* is not seen. In the reign of the Emperor Temmu the names of *Yen-rio*, now called *Kubi-kami* (a form of dress), *U-ran-i*, a coat now seen with the under-side of its sleeve closed, *Muran-i*, a coat now worn with a slit in the sleeve, and *Chō-fuku* made their first appearance, and therefore it can be settled that the reign of Emperor Temmu is the period when *Sokutai* or *Cho-fuku* originated. The regular adoption of the articles belonging to *Sokutai* took place in the year Taihō (701 A.D.) in the reign of the Emperor Mombu. Though its institution is mentioned in the record of the reign of the Emperor Kotoku (645 A.D.), such a statement can hardly be relied on.

I-KWAN.

Besides *I-kwan*, its proper name, it is also called *Tonoi-no-mono* or *Shiku-bo* (night clothes).

NAOSHI.

This dress is also called *Zo-shoku-hō*, *Zatsu-hō*, and *Choku-hō*.

The origin of this form of attire may be traced to the years Yengi (901 A.D.) and Tenreki (947 A.D.). The name of *Zas-shoku-ho* was however mentioned in the record of the reign of the Emperor Jimmei (834-850).

Previous to this era *Sokutai* was called *Hiru-sho-zoku* (dress of the day), and was the raiment daily worn in going to Court. The above mentioned *Ikwan* was also called *Tonoi-no-mono* (night dress), and was the garment worn by a person staying at Court on duty. Although in ancient times Sokutai was used, yet perhaps in the year Yengi, *Shita-gasane*, *Omote-bakama*, and *Ishi-obi* (all kinds of dress), were abridged to *Ihō* (a coat with the under side of its sleeve closed and with a particular colour dyed according to rank) and, Kari-bakama, which is the same as *Sashi-nuki-bakama* (a kind of long trousers), which were then first to be worn. This may be the origin of the *Ikwan*. The color of this *Zatsu-hō* was formerly unsettled, but since the middle ages it has been settled as white in winter, and blue and light green in summer. *Kō* and *Kio* classes (high official rank) of persons were admitted to wear this vestment by a special grant. It is then called *Zas-shoku-ho*. Although this dress, below a certain color for its proper rank, had been worn from ancient times, as it was expressly allowed under *Taiho-rei* (an Act passed in the year Taiho), yet the use of this dress, under the name of *Naoshi*, by a person who stays in

the Court on duty, as *Ikwan*, may have been commenced since the year Yengi. However, as this form of dress has also undergone a gradual change there is no means of knowing precisely in what year this abridged form of dress was instituted.

KO-NAO-SHI.

This is also called *Kari-ginu-naoshi*. (*Kariginu* originally meant clothes worn in time of hunting). When used by the Imperial family it is called *Soba-tsuzuki*, and in the residence of the Emperor's father *Kutsurogi-no-gioi*.

About the time of the Emperor Konoye (1142), the name of this dress first appeared. The garment was made by stitching *Ran* (a part of dress) to the skirt of *Kari-ginu*. When every class of persons met in a holy assembly by wearing *Kari-ginu*, *Shin-no* (princes), *Daizin* (minister), and *Taisho-ke* (General's family) used to put on *Ko-naoshi*. *Buke* (military classes of persons) following the example of *Setsu-ke* (name of high noble family), *Ashikaga Yoshimasa* (name of Shogun of Ashikaga family), put on this dress when he went to the temple of Hachiman (name of a particular god) to worship (about 1450). And also in the Toukgawa family this dress had been settled as a ceremonial dress to be worn on new year's day, in the time of Iyenari (name of Shogun), but no one besides *Shogun*, not even *Sanke* (name of a particular noble family), and *Sankio* (another family), were not permitted to put on this dress.

KARI-GINU.

The original meaning of this term is clothes worn in time of hunting. *Ho-i* is its other name.

The origin of this kind of dress is the same as *Ikwan*. The name of Hoi appears in the record of the reign of the Emperor Shotoku (about the year 760.)

This dress is the abridged form of the coat which has the under-side of its sleeve closed, and this was formerly used by servants. It was called *Kari-ginu*, from a string or cord which passed through its sleeve to tie it up when required. This term is the same as *Karibakama*. During the middle ages a dress with figures was called *Kari-ginu*, and a dress without figures was called *Hoi*. *Daijin* and *Taisho* did not wear this kind of dress. But occasionally this was used as a more pompous raiment than the *Shita-tare* dress on some joyful occasion in the family of Ashikaga at Kamakura. From about the middle part of the Tokugawa government this kind of dress was settled as *Shi-hon Kari-ginu* (*Kari-ginu* of the nobles of the rank of *Shihon*, the name of high rank) as a regular institution. This dress was called *Han-jiri* from the shortening the skirt of the back part of the coat, and was worn by children. There is also an instance of young nobles of military classes having worn this kind of dress.

SUI-KAN.

The name of *Sui-kan* has been heard since the beginning of the reign of the Emperor Sanjō (1012). There is a controversy about the meaning of the name *Suikan*, which need not be entered into here, this form of dress very nearly resembles the *Kari-ginu*. When used by civilian classes of high rank, *Suikan* was regarded as an abridged form of *Kari-ginu*, but among the military classes it was more pompously worn than *Shita-tare*. Young nobles of both *Kuge* and *Buke* (both are ranks of nobility in Japan) chiefly wore this kind of dress, and so it was called *Do-suikan* (a dress worn by youths). There was an instance of the *Naga-ginu* dress being also worn, and this kind of dress was also regarded as a ceremonial dress on the opening day of the archery practice in the first month of the year, or on the occasion of *Yabusame* (archery practice on horseback) in the time of the Kamakura, Ashikaga and Tokugana governments.

SHITA-TARE.

This is also called *Nuno-shita-tare*, which at a later period received a common appellation of *Dai-mon*, or *Kawao-hita-tare*, which was commonly called *Su-ō* or *Su-ho;* but the manner of sewing are the same. The origin of this form of dress is the same as that of *Kari-ginu*. Formerly this was used as bed-clothes, and hence

became the clothes to be used by military officers when they stay in the Court on duty, and finally the ceremonial dress of the military classes. It was worn both on ordinary occasions and in time of war with a coat of arms. *Shita-tare*, worn with the coat of arms, was sewed up with brocade or other rich cloth having heraldic figures. This was called *Yoroi-shita-tare* (*shita-tare* of the coat of arms). From this it gradually became into fashion that the civil officials of high rank had to wear *Seiko-no-shita-tare* (a kind of dress worn by nobles) on ordinary occasions. Amongst the military classes, Shogun-ke (highest military classes) used *Seiko-no-shita-tare*. In the time of Ashikaga Shogun, Kan-rio (a name of high dignity) used silk cloth, but others used *Nuno-shita-tare* (*i.e. shita-tare* made of grass cloth). This *nuno-shitatare* is called *Ura-uchi-no-shitatare*, for the inside surface of the dress was made of silk cloth. Under the government of Tokugawa, the persons above the rank of Jiziu (name of an official) were granted leave to wear *Seiko-no-shita-tare*, and from about the middle of this government *Nuno-shita-tare* had been settled as the *Shita-tare* to be worn by persons of the rank of Goi (fifth rank).

SUŌ, KO-SUŌ, and SODE-HOSO.

This is the same as *Shita-tare* above mentioned. As opposed to *Urauchi-no-shitatare* (*shita-tare* with its inside surface of silk cloth), grass cloth (*shitatare*) which has no inside surface is called *Suō*. As the string or cord became leather, the dress was also called *Kawao-no-shitatare* (*i.e. shitatare* with leather cord or string). *Suō* is a more abridged form of dress than *shita-tare*. *Ko-suō* is Suō with its narrow and contracted sleeve, and was used by the lower orders of people on New Year's Day, in the time of the Ashikaga government. And the *Suō*, with a fine and slender sleeve, is called *Sode-hoso*, and was worn with the *Kawa-bakama*, a kind of loose trousers made of leather, by persons on guard. Dress of a similar kind was in general use amongst the classes of *samurai*, farmers and artisans.

JITTOKU.

The name *Jittoku* originates about the time of Ashikagu Yoshinori (1428). Although this is a still more abriged form of dress than *Suō*, yet it was allowed to be put on in the Court of *Shogun* on ordinary occasions. This was worn with the *hakama* (a kind of loose trousers) and tied up with a *Naka-obi* (or girdle). The *Jittoku*, worn loosely over the body without either a girdle or *hakama*, is called *Hanachi-Jittoku*. This form of dress was said to have been avoided in the imperial palace. In the Court of Tokugawa, physicians were the only persons who wore this dress. The manner of making this sort of dress has undergone an entire change, and what they had to wear was nearly the same form as that of *Haori* (a garment loosely put on over a coat), the only difference being that *haori* has no string of the same cloth along a portion of the edges of the coat, but *Jittoku* has. The pompous travelling dress worn by the shaft-bearers of a nobleman's *Kuruma* (a kind of palanquin) was made of cotton or hemp, and was tied with *Yentai* (a kind of short belt) A narrower and smaller form of *Jittoku* is called *Hattoku*.

KATAGINU-BAKAMA.

What was called *Kami-shimo* in the time of Ashikaga corresponds with Suō mentioned above, and this *Kataginu-bakama* corresponds with *Kami-shimo*, a peculiar ceremonial dress of later periods. Even Shogun wore *Kataginu* of a splendid kind in travelling.

Besides the various dresses mentioned above, there were many kinds of dresses as *Dofuku*, a priest's dress; *Naga gami-shimo*, a long peculiar sort of ceremonial dress; *Han-gami-shimo*, a short *Kami-shimo; Noshime*, a kind of dress worn on ceremonial occasions; *Haori-hakama*, fire-dress, mourning dress, and *Zasshioku*, *Taikō*, *Hakucho*, *Kamban*, *Happi*, &c., of which the last six are dresses worn by the lower orders of people. All these forms of dress are at present obsolete, and are only worn in cases of ancestorial festivals or celebrations, and by the priests of Shintooism.

Articles belonging to Sokutai and I-Kwan (Nos. 1–23).

(1) Kammuri (a kind of hat worn by nobles).

From Ichi-i (first rank of nobility) to Go-i (fifth rank of nobility). Kammuri was made with a kind of gauze which has a small diamond-shaped figure of Kobishi. Its cord was also of the same cloth. From Roku-i (sixth rank) to Sho-i (lowest rank), a thin silk cloth without a figure.

(2.) Hō.

Spring and Winter.—From Ichi-i to Shi-i (fourth rank), the outer surface of Hō was a black silk figured damask, and its inner surface was Heiken, a kind of silk cloth of bluish-red. For the fifth rank the outer surface was figured vermilion damask, and the inner surface was Heiken of the same colour. From the sixth rank to the lowest rank, the outer surface was a green silk damask, not figured, the inner surface being Heiken of the same colour.

Summer and Autumn.—From the first rank to the fourth rank a black-figured kome-ori, a kind of woven cloth. For the fifth rank, vermilion figured kome-ori; and for the sixth rank, green kome-ori without figures. The colours of Hō down to the middle ages was settled by an institution. That for the first rank of nobility was deep purple; the second and third ranks, light purple; the fourth rank, deep vermilion; the fifth rank, light vermilion; the sixth and seventh ranks, deep green; the eighth and the last rank, deep bluish-red. These were changed in the course of over 890 years; that is, from the year Seireki to the present seventeenth year of Meiji (A D. 1884), the common figures of Hō were Kutsuwa (bridlebit), Karakusa (vine), Wanashi (a special figure), and others. There were also other particular figures called Kayemon in every class of family. These were put on after a person held the office of Daijin. As there were so many of these Kayemon, for instance Tsutsuji (azalea) Tatewaki of Konoye family, and Kikko (a tortoiseshell) of Sanjo family, there is no time to refer to them here.

(3 & 4.) Shita-Gasane (under-coat) and Suso (a kind of long skirt).

Originally a dress called Kami-shimo was one combined dress; but as it was very inconvenient to wear, it has become separated since the middle ages into upper and lower.

Spring and Winter.—From the first rank to the third rank, and for the fourth, fifth, and the sixth ranks which enjoy the privilege of *Kinjiki* (a privilege to wear purple clothes), the outer surface was a white damask with a figure of Fusenrio (raised work), and its inner surface was a silk damask of deep sapan-wood colour with a kind of diamond-shaped figure called Tobishi. From the fourth rank to the last, the upper surface was a white Heiken, and the inner surface, a Heiken of deep sapan-wood colour.

Summer and Autumn.—From the first rank to the third rank, and for the fourth, fifth and sixth ranks, which enjoy the privilege of Kinjiki referred to above, Komeori of sapan wood colour with a Tobishi figure; and from the fourth rank to the last, pure blue Kome-ori without a figure.

The length of the suso, or skirt, depended on the degrees of official rank, as for instance, the skirt for Daijin was ten feet long and that for the fourth rank, five feet.

(5.) Akome.

Spring and Winter.—This was worn by nobles from the first rank to the fifth rank. The upper service was either light purple or red silk damask with a figure of Ko-aoi (a small leaf of a tree called Aoi), and the inner surface was Hei-ken of the same colour.

(6.) Hitoye (a kind of thin clothes worn all through the year).

This was made of red or white damask, with a kind of diamond-shaped figure called Shigebishi, and was worn by men of every class without any distinction of rank.

(7.) UYENO-HAKAMA (worn throughout the year).

From the first rank to the third, and for the fourth, fifth and the sixth ranks, which enjoy the privilege of Kinjiki, when the person is young, the outer service was of white silk damask with a figure of the raised work of snow in Utsuro (a hollow of tree), and its inner surface was a red Hei-ken, woven in a particular way and called Itabiki; when he became adult, the outer surface was some tight woven cloth with a figure of white Fuji-no-maru (a leaf of the *Wisteria Chinensis* in circle), and the inner surface was red Hei-ken. From the fourth rank to the lowest, the outer surface was white Hei-ken, and the inner surface was red Itabiki Hei-ken.

(8.) OKUCHI (worn during the four seasons).

This was made with a reddish green Seiko cloth.

(9.) UMON-JUMPO-GOKU-NO-OBI.

A kind of girdle of precious stones, not round in its form, and with a figure on it. This was worn by nobles from the first rank to the third rank at solemn ceremonials.

(10.) MUMON-MARUDOMO-GOKU-NO-OBI.

A kind of girdle of some precious stone, not round in its form and without a figure. This was used on an ordinary ceremonial occasion by nobles from the first rank to the third rank.

(11.) MURASAKI-DAN-NO-HIRAWO.

The cord around the sword handle of a bright purple colour. This was used on solemn ceremonial occasions by nobles from the first rank to the fifth rank.

(12.) KONJI-NO-HIRAWO.

The cord around the sword handle of a dark blue colour. This was used on ordinary ceremonial occasions by nobles from the first rank to the fifth rank. From the sixth rank to the last rank, the cord of dark blue colour, without embroidery, was used on ceremonial occasions without regard to their solemnity.

(13.) MAKIYE-RATEN-NO-TACHI.

A kind of gold lacquered sword with flowers of gold.

(14.) SHIYAKU.

A small long flat piece of wood carried by nobles when in the presence of the Emperor. This was made of Ichii or Sakura wood. All ranks of nobility below the first rank carried this piece of wood. In ancient times the Shiyaku of nobles was made of ivory, but since the middle ages wooden ones have been used.

(15.) ŌGI (a kind of fan).

Both in summer and winter, Hi-ogi (a fan made of *retinispora obtusa*) was used. Young nobles below the fourth rank wore ōgi made of a sheet of paper. This kind of fan was called *Hempuku-no-ogi*.

(16.) TATO (a kind of portfolio made of paper).

Mutsu-gami, or paper made from a wood called Mayumi (*evonymus Thunbergianus*), and red Usuyo (a kind of paper) were used; cord called Atehimo when the Hō was worn.

(17.) KUWA (a particular kind of shoe).

This was worn by nobles from the first rank to the sixth rank on solemn occasions.

(20.) KINU (a kind of dress).

From the first rank to the fifth rank, a silk damask with the figures known as Fusensio and Ko-aoi was used for Kinu. Its colours were red, light purple, yellow, reddish blue, light green, etc. Also Kinu of white colour was worn by aged nobles

(21.) SASHI-NUKI (a kind of loose trousers).

Sashi-nuki is a Hakama or kind of loose trousers with a long skirt. When this was worn, the skirt was folded up in the inside and was tied around under the knee by a cord. This dress was worn by nobles from the first rank to the third rank and of the fourth, fifth and the sixth rank who enjoy the privilege of Kinjiki. In childhood the cloth of this Sashi-nuki was a purple woven fabric of some raised work with the figure of Kikko (tortoiseshell); for youths, white cloth with purple raised work and the figure known as Tori-dasuki; and for adults, the cloth of Sashi-nuki was a hard purple woven fabric with the figure of Fuji, or leaf of the *wisteria chinensis* in circle. For old people a strong light yellowish woven fabric with the figure of a leaf of *wisteria chinensis* in circle was used. The inner surface of these Sashi-nuki were all Hei-ken of the same colour. In the fourth and fifth ranks, both the outer and inner surfaces were Hei-ken, and the colour was purple in time of youth, and a light purple for adults. From the sixth rank to the last, the outer surface was Haku-fu (white grass-cloth), and its inner surface was Hei-ken of the same colour. This was called Awobakama.

(22.) SASHIKO (a kind of quilted loose trousers).

The colours and the figures of Sashiko were the same as those of sashi-nuki. The only difference was that the skirt of Sashiko was not folded up, as it is short. This was called Kiribakama, and was an abridged form of Hakama or loose pantaloons, worn by a person who attends the court on an ordinary day.

(23.) NODACHI (a kind of sword worn in time of hunting).

Those who were entitled to wear swords wore this kind even when donning the dress called Ikwan-Naoshi. It was worn when dressed, in a purple or blue silk cloth.

Articles belonging to the Naoshi.

(24–26.) THE NAOSHI COSTUME.

From the first to the third rank, both in spring and winter, the outer surface of *Naoshi* was the white silk damask, known as Fusenrio, and the lining when worn by youths, was purple Hei-ken, for adults a light purple Hei-ken was used, and for old people a light green Hei-ken. In summer and autumn the cloth of *Naoshi* was Kome-ori cloth, with the Sanjū-dasuki (figures). Its colour was a pure blue for young persons, a deep greenish red for adults, and a light greenish red for aged persons. *Naoshi* was not allowed to be worn in time of Sundai, or attending the Imperial court, unless by special privilege. The person who had been privileged in regard to this colour, and who were permitted to wear the *Zuppo* dress, attended the court by wearing *Naoshi*, even if he were of the fourth, fifth, or sixth rank. Again, the *Konoye-no-Chujō*, or lieutenant-general of Imperial body-guard, and the *Konoye-no-Shoshiō*, or major-general of Imperial body-guard, though they might be of the fourth or fifth rank, were admitted to attend the Court by wearing *Naoshi*. But its outer surface in spring and winter was a white Hei-ken, and the lining a purple Hei-ken. In summer and autumn it was of a pure green Hei-ken.

(27.) ASAGUTSU (a particular kind of shoes).

This kind of shoes was worn on ordinary occasions. Their inner-side surface was a piece of Uwa-bukama cloth.

Articles belonging to Konashi.

(28.) TATE-YEBOSHI (a particular cap worn by nobles).

The word *tate-yeboshi* was used in opposition to the term *Ori-yeboshi* (another kind of cap).

(29, 30.) KONAOSHI.

This was also called *Kariginu-naoshi* or *soba-tsudzuki-ginu*, and was a garment that could be worn during all four seasons. This was worn even by the Daijin and Dai-chiu-Nagon officials if they were officers of the Imperial body guard at the same time. Its cloth may have been raised woven fabric, or a kind of gauze, or a green

Hei-ken according to the age of a person, and its colour of light green, purple, sap-green, yellow, light yellow, bluish red, &c., was left to the will of the wearer. The lining was in all cases Hei-ken of any suitable colour. The colour of Sode-Kukuri was *murasaki-dan* when the wearer was young, *moyegi-dan* or *Usuro-dan* when adult, and *Kōdan* when old.

Articles belonging to Kari-ginu (Costume).

(31.) KARIGINU.

Kariginu was worn in all four seasons. There were several differences in its substance according to the ages of the wearers. Above the fifth rank it had lining, and below the sixth rank it was called *Nuno-Kariginu*, or grass cloth, and the silk fabric or the kind of gauze was never worn. Obi or girdle of Nuno-Kariginu was a piece of cloth used in Shita-gasane. Above the third rank it was a silk damask of Suo-no-Sudzushi (a kind of damask) in summer, and in winter it was a white silk Fusencho damask. Below the fourth rank it was of a pure blue, and made of the woven cloth called Komeori in summer, and in winter its outer surface was white, and the lining black, &c. In white Kariginu the black cloth was made its outer surface, which change was called *turning the girdle.* All these kinds of Kariginu had a Sode-Kukuri, or sleeve binder, which also differed in its substance according to the age of the wearer in the same way as Konaoshi.

YOROI-SHITATARE (a kind of dress worn with the coat-of-arms). (32–33.)

(32.) YEBOSHI (a kind of cap) used in Yoroi-shitatare was made of a kind of red silk called Momi.

(33.) KINRAN-NO-SHITATARE (a shitatare made of cloth called Kinran) was the dress to be worn by the general of an army.

(34.) ZOSHIOKU (a kind of clothes).

Zoshioku was the clothes to be worn by the servant who belonged to the Samurai class.

(34A.) HITOYE (a kind of silk clothes).

(35.) HOSOTATE-YEBOSHI (a kind of cap).

(36.) HAKUCHO (Costume).

This was the attire of a servant who did not belong to the Samurai class, but a mere follower.

(37.) YEBOSHI (a kind of cup).

The Ceremonial Costume of Tenji (a name of a high female official in Imperial Court).

(38, 49.) KAMIAGE (hair ornament).

(39, 50.) KAMOJI, or false hair worn by women, or wig.

(40, 51.) KUSHI (Comb).

These ornaments to Tenji and Naiji were worn on solemn occasions during summer and autumn.

(41.) KARAKOROMO (upper coat).

The cloth was a yellow woven fabric with raised work.

(42.) OMOTE-GINU (a kind of coat).

This was made with the cloth woven lengthwise, and the figure Nami-tate-waki.

(43.) ITSUTSUGINU (five under-coats).

Cloth woven lengthwise and of peach colour.

(44.) HITOYE (a kind of thin dress).

Made Red Tobish cloth.

(45.) AKA-UCHI-BAKAMA (a kind of dress).

Its cloth was Seiko (a silk fabric).

(46.) Mo (a kind of dress).

White woven fabric with the figure of Kiri (the Paulownia Imperialis) and Hō-ō (the Phœnix).

(47.) KAKE-OBI (a kind of belt, made of white gauze, figured).

(48, 57.) HI-OGI (fan made of the *Retinispora obtusa*).

The Ceremonial Costume of Naiji (a name of a high female official in Imperial Court).

(49.), (50.), *and* (51.) *See the numbers* (38.), (39.), *and* (40.).

(52.) KARAKOROMO.

The cloth was a purple Seiko with raised figures.

(52A.) OMOTE-GINU (a kind of coat).

The cloth woven lengthwise with the colour of Kōbai, or red plum blossom.

(53.) ITSUTSUGINU (five under-coats).

Yellow cloth woven lengthwise.

(54.) HITOYE (a kind of thin dress).

A light green Tobishi cloth.

(55.) AKA-UCHI-BAKUMA (dress).

The cloth was Seikō.

(56.) Mo (dress).

White Seikō, with figures.

(57.) *See* (48.).

Ceremonial Costumes of Daimio and Samurai of high rank now not in use.

(No. 58–64.)

(58.) NAGAGAMISHIMO (Long Court Costume).

The material used is mostly linen, or sometimes Riumon (a peculiar kind of silk). The colour is a lightish blue on which small figures in white are dyed.

KAMISHIMO (Court Costume).

It is derived from Suwo (Court Costume) in the dynasty of the Shogun Kamakura, the upper portion of which is the representation of Suwo by almost cutting off the sleeves, and two folds are sewed on each side, in order to make the lower part narrow. The back part is square, having a seam in the middle, and the upper part is laced with small pieces of whalebone. There are three crests in the upper clothing.

The trousers are like those of the Suwo. Its length is about 4 *shaku* in front, five folds are made and a paste board is attached to the back, and some cords are also attached to the front as well as to the back parts of the dress.

Method of Making.—The Kami (or upper portion) is made by sewing together two pieces of cloth cut to a certain size, plaiting it, and finished by pressing.

The Shimo (or lower portion) is made by sewing together three pieces of cloth with a paste board at the back; also folds are made, and the work is finished by pressing.

In dressing the Kami is first put on both shoulders, fastening the front extremities between the belt, and then the shimo is worn over it. The latter is tied up with cords. When walking the lower clothing is made shorter by tucking up with the cords.

(59.) Obi (belt).

This is made of Hakata silk, and is not different from the belts worn in ordinary dress.

(60.) Noshime (cloth worn by Daimio and Samurai class).

Noshime is made of the cloth woven with white and raw silks dyed in dark blue colour (mostly Kachin colour or somewhat light blue). The part near the loins is folded on white ground.

The method of wearing is the same as that of an ordinary coat. Noshime is a kind of vestment which must be lined; therefore in summer time single montsuki (ceremonial clothes with crests dyed) is worn instead of Noshime.

(61.) Shitagi (undercoat).

As to the colour of shitagi, pure white is the fixed colour for Officers above 5th rank, those under the 5th rank wear light blue.

(62.) Pair of Swords, long and short.

In ancient times every Samurai carried these two swords, the long one is called Katana and the short one Wakizashi. There are several kinds of swords, but the swords which are now exhibited are the ones worn with *Kamishimo*, and such a pair of swords is called Kamishimozashi. When wearing the Nagagamishimo, only one sword called Chiisa-gatana, or small sword, was carried. This is a little shorter than the Katana and is made in different forms

(63.) Inro (small ornamental nest cases).

These are made by bending wood, and are gold lacquered. They are used as a case for medicines and are carried round the loins. It is the established rule to carry it when wearing a ceremonial dress.

(64.) Kamishimo (court costume).

This is almost the same as *Nagagamishimo*, but the trousers are shorter. *Kamishimo* is the general court costume for high as well as low classes of people, and it is a rule to wear also Montsuki (ceremonial clothes with crests dyed). In certain cases, the upper and lower portions are different from each other, the upper portion being called Kataginu and the lower Hakama (trousers); two of these combined are called Tsugigamishimo or connecting Kamishimo, which was an abridged ceremonial dress in the time of Shogun Tokugawa. When wearing this it was not necessary to wear the Montsuki.

Nagagamishimo is only worn on ceremonial occasions by the people who are not below the Daimio class, and when they wear this, Noshime (cloth worn by Samurai class on occasion of ceremony) and an undercoat which has neither patterns nor figures dyed on it must be worn.

Female Ceremonial Costumes. (*No.* 65–72.)

(65.) Uchikake (embroidered garment).

Rindzu is, as the general rule, the material used for making *Uchikake*, and sometimes figured crapes are used, and no crest is dyed on such clothes. It is made in the same way as common Uwagi (coat), but its special length is about 5 *shaku*. This dress is worn over the Aigi or under-coat, and no belt is tied upon it. The *Uchikake* for girls has wider sleeves, called *Furisode;* that which is used in time of semi-ceremonial occasion has patterns called Susomoyo in the hinder parts.

When wearing *Uchikake* with the patterns whole, the hair must be dressed in

such a way as to hang down the back, a fashion called Sagegami, and two black points are marked on the forehead. However, in time of wearing Susomoyo, neither such hair dressing nor this mark is necessary.

(66.) Obi (belt).

This is made in the same way as the common belt, but is worn in such way as to fasten not in the back but in front, except in cases of wearing the Furisode.

(67.) Koshi-obi (tightening belt).

This is made of white figured crape and is a narrower kind of belt, the breadth being about 2 *sun*; this is worn in the same way as a common belt, but is not necessary on any solemn ceremony.

(68.) Aigi (coat).

The material is generally red crape; it is made and put on in the same way as the common Uwagi or upper coat

(68.) Shitagi (under-coats).

These are made of a white silk fabric called Rindzu, or sometimes of another silk fabric called Nanako; the methods of making and of wearing are the same as the usual dress.

(70.) Jiban (under-clothing).

These are made of a white silk fabric called Habutai; the methods of making and wearing are the same as the ordinary dress.

(71.) Koshimaki (petticoat.)

This is made of crape, and is not necessarily used for a solemn ceremony.

(72.) Hakoseko (ornamental purse).

It is made of woven cloth and velvet of about 5 *sun*; is carried on the belt and is used as a case for keeping papers in. This is one of the ceremonial appurtenances, but is not used in ordinary attire.

Girls' Ceremonial Costumes. (No. 73–89.)

(73.) Uchikake (embroidered garment).

(74.) Uchikake (embroidered garment).

(75.) Obi (belt).

(76.) Aigi (coat).

(77.) Ditto.

(78.) Shitagi (under coat).

(79.) Ditto.

(80.) Awase (coat without silk between the stuff and the lining).

It is worn in spring and autumn in the same way as Aigi.

(81.) Awase. Ditto.

(82.) Ditto.

(83.) Ditto.

(84.) Hitoye (summer coat made of silk).

(85.) Ditto.

(86.) Katabira (summer coat made of linen).

(87–89.) TSUKE-OBI, TSUKESHITA-OBI and TSUKE-OBI NAKA-YUI (belts).

Quality of materials and way of making and wearing the dresses from No. 73 to 89 are the same as for Female Ceremonial Costumes.

Naval Uniforms.

(Introductory notes to the description of the uniforms by the authority of the Imperial Japanese Navy Department.)

The authorities of the International Health Exhibition having requested the Japanese Government to contribute specimens of the different kinds of uniforms worn in the Japanese navy, various articles belonging to that service have been sent for exhibition. These uniforms from Commodore to Sailors have been respectively made and are now shown in the Conference Hall of the Exhibition. As, however, only a short time has elapsed since the dress regulations were subjected to revision, the system is not yet in proper working order; and moreover, as the time for forwarding the articles was limited, and the clothing factory had not time to make up a number of different kinds of uniform, only such uniforms as are typical and made of the most different materials have been made up and sent, together with some samples of the fabrics used in their manufacture, and a copy of the Official Dress Regulations for the Japanese Navy. The Commissioners venture to hope that this endeavour to give a general idea of the Naval Dress will be intelligible to the English public.

KAIGUN TAISA (Commodore).

(90.) One set of TAIREI-FUKU (full dress).

The cloth of the tunic and trousers is a dark blue woollen cloth of foreign manufacture. The waistcoat is of linen of foreign manufacture; and the lining is white silk damask of native manufacture.

(91.) TAIREI-BO (cocked hat, cloth velvet).

(92.) Two pairs of KENSHIO (epaulettes).

The gold cords are of native manufacture.

The *Tairei-fuku* for the undermentioned ranks in the Japanese Navy are nearly alike, viz., Admiral, Vice-Admiral, Rear-Admiral (*Taisho, Chujo, Shosho*); Captain, Commander (*Chusa, Shosa*); Lieutenant-Commander, Lieutenants, Master, Assistant Master *Taii, Chui, Shoi, Shoiho*); Head Inspector of Machinery (*Kikan Sokan*); First Inspector of Machinery (*Kikan Taikan*); Second Inspector of Machinery (*Kikan Chukan*); Third Inspector of Machinery (*Kikan Shokan*); First Engineer (*Tai-kikanshi*): Second Engineer (*Chu-kikanshi*); Third Engineer (*Shō-kikanshi*); Assistant Engineer (*Kikan Shiho*); Head Inspector of Medicine (*Gun-i Sokan*); First Inspector of Medicine (*Gun-i Taikan*); Second Inspector of Medicine (*Gun-i Chukan*); Third Inspector of Medicine (*Gun-i Shokan*); First Surgeon (*Tai Gun-i*); Second Surgeon (*Chū Gun-i*); Third Surgeon (*Sho Gun-i*); Assistant Surgeon (*Gun-i ho*); Head Inspector of Finance (*Shukei Sokan*); First Inspector of Finance (*Shukei Taikan*); Second Inspector of Finance (*Shukei Chukan*); Third Inspector of Finance (*Shukei Shokan*); First Paymaster (*Tai Shukei*); Second Paymaster (*Chu Shukei*); Third Paymaster (*Shō Shukei*); Assistant Paymaster *Shukei ho*); Head Gunner (*Shohō Jōchō*); Head Boatswain (*Suihei Jōchō*); Head Carpenter (*Bokkō Jochō*); Head Mechanist (*Kikankō Jochō*); Chief Gunner *Shohō Chō*); Chief Boatswain (*Suihei Cho*); Chief Carpenter (*Bokko Cho*); and Chief

Mechanist (*Kikanko Cho*). There is, however, a difference in the number of stripes of embroidery on the sleeve, in the size of buttons, and in their ornaments on the collar and shoulder of the tunic; also in the trousers and in the cocked hats and caps. If a more precise account of these articles is desired, such an account may be found in the Official Regulations for Naval Dress, and a description of the cloth of native manufacture, used in making some of these uniforms, is given in a list of the kinds of cloth, the places of their production and the names of the manufacturers which is here exhibited. No mention of such matters need be made here.

KAIGUN TAISA (Commodore).

(93.) One Set of Reifuku (undress).

The material of the tunic and trousers is a dark blue woollen cloth of foreign manufacture.

The material of the waistcoat is linen of foreign manufacture; the lining being white silk damask of native manufacture.

(91 and 92.) Reibo and Kensho.

These are the same as those of Taireifuku (full dress uniform for state occasions) and are therefore omitted here.

Besides the *Reifuku* (or ordinary full-dress uniform) for *Shōkō* (that is for officers from the rank of Admiral to that of Assistant Master), and *Jūn Shōkō* (officers from Head Inspector of Machinery to Assistant Paymaster), are all the same in their material and making up, but there is a difference in the number of stripes on the sleeve, in the size of the buttons, and in the ornaments on the collar, shoulder, and in the shape of the hat, in much the same way as those of *Taireifuku*. And the *Reifuku* for the Head Gunners, Head Boatswain, Head Carpenters, Head Machinists, Chief Gunners, Chief Boatswain, Chief Carpenters, and Chief Machinists are just the same as their *Taireifuku*. For further particulars the dress regulations for the Navy may be referred to.

KAIGUN TAISA (Commodore).

(94.) One Set of Seifuku.

The material for the tunic, waistcoat, and trousers is a dark blue woollen cloth of foreign manufacture; and their lining a black damask of native manufacture.

(95.) Sei-bo (cap).

Besides upper garment of the *Seifuku* for *Shoko*, *Jun Shōkō* and *Jun Shikan* (officers from Head Gunners to Chief Machinists) it takes the pattern of a frockcoat, and are the same in their cloth, but, as in the case of other naval uniforms, there is a difference in the number of stripes and in the ornaments. Their badges on the hat are the same as those in Tairei-fuku, particulars of which may be obtained from the official dress regulations.

The material is a dark blue woollen cloth of foreign manufacture.

KAIGUN TAISA (Commodore).

(96.) *Riyakufuku* (tunic).

Material—a dark blue woollen cloth of foreign manufacture.

Riyaku-bō.

This is the same as that of *Sei-bo* (a hat for work).

The *Riyakufuku* for *Shōkō*, *Jun Shōkō*, and *Jun Shikan* are all of a dark blue woollen cloth or serge, and all are of a jacket shape. There is a difference, however, in the number of stripes, &c., as in Seifuku. The particulars on these points may be obtained from the dress regulations.

KAIGUN TAISA (Commodore).

(97.) Overcoat.

The material is a dark blue woollen cloth of native manufacture; and its lining a certain damask of native manufacture. The overcoats for *Shokō*, *Jun-Shōkō*, and *Jun Shikan* are all alike both in their cloth and cut, but they are distinguished by the size of buttons and by the presence or non-presence of the strip of gold lace on the sleeves. Fuller details may be obtained from the dress regulations.

KAIGUN TAISA (Commodore).

(98.) Two Swords (long and short).

Sword-Belt.

The long sword and the sword-belt for the *Shōkō*, *Jun Shōkō*, and *Jun Shikan* are all alike both in their length and workmanship, except there is a distinction in the badges on the front of the sword belt, and in the figures on the hilt. The short swords for *Shoko*, *Jūn Shoko*, and *Jun Shikan* are all alike in every respect. The Assistant Master, Assistant Engineer, Assistant Surgeon, and Assistant Paymaster, do not wear a long sword but a short one only. Particulars may be seen in the official regulations.

KAIGUN SEITO (naval cadets).

(100.) Seifuku.

The material of the jacket, waistcoat, and trousers is a dark blue woollen cloth of foreign manufacture.

(101.) Sei-bo (cap).

Material—a dark blue woollen cloth of foreign manufacture.

(102.) Riyaku-fuku.

The cloth of the upper garment, waistcoat and trousers is a dark blue woven material called Kokura-ori, and is of native manufacture.

(103.) One suit of Summer Clothes.

The upper garment, waistcoat, and trousers are made of a white material called *Kudzushiro-ori*, of native manufacture. The summer clothes, *Sei-fuku* and *Riyaku-fuku* for the cadets of the engineering department are all alike, both in material and make. The cadets of the surgeon and paymaster classes wear a winter and summer suit without any distinction of *Sei-fuku* and *Riyaku-fuku*. The cloth of the winter garment is either a dark-blue woollen material or *kokura-ori* of the same colour. The cloth of the summer garment is a white *kudzushiro-ori*, and its make is the same as that for the engineering cadets, with the sole exception that the summer garment for the cadets of the surgeon and paymaster classes has stripes on its sleeves. Further particulars may be gathered from the Dress Regulation for the navy.

KAIGUN ITTO HEISO (Chief Petty Officer, Midshipman).

(104.) Rei-fuku.

The material of the jacket, waistcoat and trousers is a dark-blue woollen cloth of foreign manufacture.

(105.) Sei-bo (cap).

Material.—A dark-blue woollen cloth of foreign manufacture.

(106.) Sei-fuku.

The material of both the long jacket and the trousers is a dark-blue woollen cloth of foreign manufacture.

(107.) Riyaku-fuku.

Cloth of both upper garment and trousers, a dark-blue serge of foreign manufacture.

(108.) NATSU-FUKU.

Cloth of both upper garment and trousers is a white *Kudzushiro-ori* of native manufacture.

The *Rei-fuku*, *Sei-fuku*, *Riyaku-fuku* and *Natsu-fuku* for first-class Machinists, First-class Torpedo-makers, First-class Carpenters, Chief and Staff Carpenters, Chief Firemen, First-class Stewards and First-class Warden are all alike both in material and make, except that some are double-breasted with either standing or turn-down collar, while others are single-breasted with a turn-down collar. Some have stripes on their sleeves and some have not, some have two rows of buttons, others only one. They also differ in the ornaments on the hat and under the Japanese arms. The particulars may be referred to in the Dress Regulation for the Navy.

KAIGUN-KANNAI-KIYOJU-YAKU (Ship's Schoolmasters).

(109.) REI-FUKU.

The material of the frock coat waistcoat and trousers is a dark-blue woollen cloth of foreign manufacture.

(110.) SEI-FUKU.

The cloth of both upper garment and trousers is a dark-blue woollen cloth of foreign manufacture.

(111.) RIYAKU-FUKU.

The fabric of both coat and trousers is a dark-blue serge of foreign manufacture.

(112.) NATSU-FUKU.

The long jacket and trousers are both made of white *kudzushiro-ori*, of native manufacture.

The fabrics of *Rei-fuku*, *Sei-fuku*, *Riyaku-fuku* and *Natsu-fuku* for warrant officers, first-class clerks, second-class machinists, second-class torpedo makers, ships' school master, assistant warrant officers, second-class clerks, second-class stewards, second-class warden, third-class machinists, and third-class torpedo-makers are of two sorts, a dark-blue woollen cloth and serge of the same colour. Again *kudzushiro-ori* is also used in making these uniforms. Their shape is either the frock coat or short jacket, single-breasted, with a turn-down collar, or double-breasted with a standing collar, stripes of embroidery on their sleeves, or without these, they are also distinguished by the badges under the crests and by the number and kinds of their buttons. Full particulars of these distinctions may be referred to in the Dress Regulation for the Navy.

KAIGUN-NITO-YEISO (Petty Officer).

(113.) REI-FUKU.

The material of both jacket and trousers is a dark-blue woollen cloth of foreign manufacture.

(114.) SEI-FUKU.

The material for both coat and trousers is a dark-blue serge of foreign manufacture.

(115.) RIYAKU-FUKU.

Cloth—a dark-blue serge of foreign manufacture.

(116.) NATSU-FUKU.

Cloth of upper garment—a white *kudzushiro-ori* of native manufacture; trousers of duck of foreign manufacture.

(117.) NATSU RIYAKU-FUKU.

Cloth—a white *kudzushiro-ori* of native manufacture.

(118.) Bō (Cap).

Made of a dark-blue woollen cloth of foreign manufacture.

(119.) NATSU-BŌ (Summer Hat).

Material—leaves of the Shuro (Palm) tree.

(120.) JIGIŌ-FUKU (Working Jumper).

Cloth—a white *kokura-ori* of native manufacture.

(121.) HADAGI (Shirt).

Made of white flannel of native manufacture. All dresses from *Rei-fuku* to *Hadagi* of all seamen, artists and firemen, as also third-class midshipmen, chief and sub-carpenters, chief and sub-chief coopers, chief and staff blacksmiths, chief and staff arms-makers, chief and staff plasterers, chief and staff firemen, seamen and apprentices, signal-men, carpenters, coopers, sail-makers, rope-makers, blacksmiths, plasterers, firemen or firemen apprentices are alike both in their material and shape, and they are only distinguished by the badges on their cap and under their crests.

KAIGUN JUN-SOTSU (Naval Officers' Servants and Domestic).

(122.) One suit of REI-FUKU.

Cloth of jacket, waistcoat and trousers, a dark blue woollen cloth of foreign manufacture.

(123.) One suit of SEI-FUKU.

Cloth of both jacket and trousers, a dark-blue serge of foreign manufacture.

(124.)-One suit of NATSU-FUKU.

Cloth of both jacket and trousers, a white *Kudzushiro-ori* of native manufacture.

(125.) Bō (Cap).

Material, a dark-blue woollen cloth of foreign manufacture.

The *Reifuku*, *Seifuku* and *Natsufuku* of third-class clerks, third-class stewards, third-class wardens, and other stewards and cooks; stewards of admirals, cooks and staff cooks of admirals, tailors, shoe-makers, followers of admirals, stewards of captains, cooks of captains, steward in the rooms of *Shikan* (officers from admirals to assistant masters), cooks in the cabins of *Shikan*, stewards in the second-class cabins of *Shikan*, cooks in the second-class rooms of *Shikan*, stewards in the rooms of engineers, cooks in the rooms of engineers, followers of captain, followers of *Jō-chō kan* (head-engineer, &c.), boys, lamp lighters, barbers, staff cooks of captain, stewards of *Jun-Shikan*, cooks of *Jun-Shikan*, boys in the cabins of *Shikan*, staff-cooks in the cabins of *Shikan*, followers of *Shikan*, who are attached to the admiral, followers of *Shikan* in their cabins, boys in the second-class cabins of *Shikan*, and the boys in the rooms of engineer, are all made of a dark-blue woollen cloth or a serge or a *Kudzushiro-ori*, and their shape is a short jacket, single-breasted, with either standing or turn-down collar. The number of buttons differ. The full particulars of their dress may be obtained from the Dress-Regulations for the Navy.

(126.) SPECIMENS OF MATERIALS, for the Uniforms, etc., of the Imperial Japanese Navy.

(127.) Official Dress Regulations of the Imperial Japanese Navy.

Suit of Winter Clothes—Superior Quality (for Males.)

(128) HAWORI (a kind of coat made of Nanako, lined with Kaiki silk and bearing the owner's crest in three places).

There is no restriction as to the materials used for Hawori; it is made either of silk or of cotton. When *Nanako* is used, it is generally lined with *Rindzu*, and this may be considered to be the best kind of *Hawori*.

As to the method of making it up, the entire piece of the fabric is first divided

into Sode or sleeves, Migoro or body, Yeri or collar, and Machi (subsidiary parts). These portions are lined and then turned inside out; the pieces of stuff are sewed together on each side of the collar in front, to which cords are fastened.

The *Hawori* hangs down a little below the knees, and the measure is taken from the central seam in the back to the end of the sleeve, and down as far as the wrist. Sometimes a certain length of the seam is cut; this is called *Waribawori*, and is at present very rarely used.

The crests are commonly inserted on three places of the garment, one in the centre of the back and the other two on the outside of each sleeve. They are sometimes embroidered in silk. The Hawori may also have only one crest, or even none at all. The original use of the Hawori was to keep out the cold; however, it has been recently used as a kind of ceremonial dress. It is worn over the *Uwagi* or over garment, and is fastened in front with silk cords.

(129) HAKAMA (kind of loose trousers made of striped silk (Sendaihira), lined with Kaiki).

These are special materials woven for making *Hakama*, which materials are properly called *Hakamaji* (goods for *Hakama*). There are various kinds of these, but that made at Sendai, in the province of *Rikuzen*, is the best, and is called *Sendaihira* or Sendai silk.

As to the mode of making *hakama*, it is almost the same as that of making *Kamishimo* (a kind of court costume); the length of the gore and the width of the skirt are the peculiarities of Hakama; a thin piece of wood or of paste board is used for the board attached in the back.

The mode of wearing Hakama is the same as that of wearing *Kamishimo*. *Hakama* is one of the kinds of undress court costumes. There have been many kinds of *Hakama*, such as *Kobakama* (a kind of trousers tied at the knee), *Nobakama* (a kind of trousers tied around the leg), *Hirabakama* (a kind of trousers having a lower gore), *Umanori-bakama* (a kind of trousers used for riding on horseback), *Machidaka-bakama* (a kind of trousers having a higher gore), &c., but all of them have become obsolete, and the only kind which has been retained to the present time is *Machidaka*.

(130) OBI (silk girdle).

The Obi, called *Hakata obi*, which is made of silk produced at Hakata, in the province of Chikuzen, is the best of many kinds.

As to the method of making it, in the first place the material for the Obi is folded with a coarse kind of cotton cloth surrounded with cotton between the folds. and it is then sewed up. The length is 10 *shaku* and the width about 2 *sun*. The kind of obi to be exhibited upon this occasion is called *Kujira obi*, owing to the difference of colours on each side. The mode of wearing it is to wind it around the waist three times, and then to tie it up at the back.

(131.) UWAGI (a black silk garment lined with silk, and having five crests).

Mode of making it up.—A piece of silk of a certain length is first divided into four pieces, namely, *Sode*, *Migoro*, *Okumi* (the gore sewed into the front of upper garments) and Yeri. A certain quantity of silk wadding is put between the stuff and the lining, and the goods are then sewed up with silk thread of similar colour, and a black silk fabric called *Kurohachijo* is sewed to the end of each sleeve. The length of *Uwagi* is such that it hangs to the lower part of the legs; the width measured from the ends of the sleeves is enough to allow it to reach to each wrist. This is called a *Wataire*, or wadded coat, and an *Uwagi* that has no wadding, is called *Awase*, or lined garment. Five crests, two on the breast, two on the sleeves and one on the back are left white in the dyeing, and this is the most correct way of having them. Sometimes the crests are embroidered in silk. Some *Uwagi* have three crests, or even one only. When the goods are striped there is usually no crest; however, it is sometimes even then embroidered on in silk.

The materials for *Uwagi* are so numerous that they cannot be enumerated here, and it is the same with respect to Shitagi, or underclothes, and *Dogi* (a short jacket worn generally inside the *Shitagi*.)

The mode of wearing Uwagi.—The upper part is hung on the shoulders, and the arms are passed through the sleeves, and the long collar is folded over the breast from left to right.

It is the same with *Shitagi*, *Dogi* and *Jiban* (undershirt).

(132.) SHITAGI (an undergarment of Kihachijo (yellow silk) lined with silk).

The mode of making it up is the same as that of *Uwagi*, and the length and width must correspond with this latter.

(133.) DOGI, of Kihachijo, lined with silk.

The method of making up this is the same as above, but it has no skirt, and the outside has an edge turned over a little towards the inside, which is the peculiarity of a *Dogi*. There are *Dogi* that have neither gore nor collar. This dress is long enough to hang over the loins, that is, it is about 2½ *shaku* long.

It is worn in winter time inside the Shitagi for the sake of warmth.

(134.) JIBAN (an undershirt of crape lined with cotton).

In the first place, a piece of crape of a certain fixed length is divided into three parts, *Sode*, *Migoro* and *Yeri* and is then made up. The length is the same as that of a *Dogi*. There are two kinds of *jiban*, double and single ones.

It is worn next the skin, and is used in Winter as well as in Summer. The material varies with the season.

(135.) TABI (a kind of socks, with clasps).

In ancient times leather was used, but of late cotton is usually employed as the material for *Tabi*. The kinds shown at the present exhibition are two in number, one being made of silk ; one pair is black and the other white.

As to the method of making them, calico is cut into the shape of the upper part of the foot and into that of the sole, after a paper model ; the part between the great toe and the next one is divided, and then the pieces of material are sewn together, and thus the *Tabi* is made. The dividing is only for the purpose of allowing *Geta* or wooden-clogs, and *Zori* or straw sandals to be worn. The size is calculated by *Mon* and *Bu*, and it is of course dependent upon the size of the feet. The mode of fastening on *Tabi* is by clasps or cords.

Inferior kind of Suit of Winter Clothes (for males).

(136.) HAWORI (of striped cotton cloth lined with silk).

The method of making is the same as for the superior kind, differing only in the quality of the material. The following kinds of garment are the same as those previously described.

(137.) HAKAMA, made of Kokura-ori, a peculiar kind of cotton cloth.

(138.) OBI (of Kokura-ori).

(139.) UWAGI (of striped cotton cloth).

(140.) SHITAGI (of striped cotton cloth).

(141.) DOGI (of striped cotton cloth).

143.) TABI (of cotton cloth).

This is made of cotton cloth after it has been dipped into water, hammered and dried ; the soles are made of *Unsai*, a thick kind of cotton cloth.

Superior Winter Clothes (for females).

(144.) OBI (of silk fabric).

There are many kinds of common *obi*, but the superior kinds are generally made of *Nishiki* or silk brocade, *Hakata-ori*, etc. ; Velvet and shusu or satin are the materials generally used for making obi. The method of sewing them is the same as of sewing men's *obi*, but the length of a woman's is 10 *shaku*, and its breadth about 9 *sun*.

The method of putting it on, is to fold it, wind it round the waist, and then tie it at the back. There are many ways of tying it, according to the age.

The wearing of a broad *obi* in our country has been the custom since the middle ages, and it is one of the peculiar characteristics of the Japanese people.

(145.) OBIDOME (girdle around the *obi* to secure it).

This is generally made of braid or of silk cord, at the extremities of which pieces of silver or of gold are fastened.

It is fastened around the middle of the obi in order to prevent its slipping.

(146.) OBIAGE (silk material used for fastening the obi).

This is made of crape, silk cloth, etc. The length is about 7 *shaku*, and the breadth about one *shaku*.

The method of putting it on, is to pass it through the knot of the obi and to tie it in front. Its use is to prevent the obi from getting loose.

(147.) HOSOOBI (small silk girdle).

This is a cord made of silk or of crape folded and sewn, and is about the breadth of a finger.

One Hosoobi is used to tie and to suspend the *Yeri okubimi*, upon which another one is also tied but is concealed by *obi*, when it is wound around.

(148.) UWAGI (gown of crape lined with red silk).

The method of making this is almost the same as that for men's, but the gown is longer than theirs. The principal difference between men and women's *Uwagi* is, that women's has *Yatsukuchi*, and wider *Fuki*, and the collar and *Sodekuchi* are faced with satin. The method of wearing it, is described under the head of *Hosoobi*.

(149.) SHITAGI (under clothing).

No other description than what has been given in the case of men's is required.

(150.) JIBAN (long shirt of crape lined with cotton cloth).

The description is the same as that of men's, differing only in length. It is long enough to reach to the feet. It may be either lined or unlined.

(150*a*.) SHITA-JIBAN (silk undershirt with narrow crape sleeves).

This is made of silk; the sleeves being made narrow at the ends.

Shitajiban is used only for preventing the jiban from becoming dirty, and is therefore not a necessary article of dress.

(151.) TABI, of Habutai (double silk cloth).

The description of these is similar to that of the tabi for men

Common Winter Clothes (for females).

(153.) HAWORI (of corded silk cloth).

This is same as men's, differing from theirs only in having *Yatsukuchi* (openings in the sleeves under the arms), in being short, and that the *Sodekuchi* is small.

(154.) OBI (of silk).

There is no difference, in form, between the good and common kinds, though of course the material in the latter is inferior, and sometimes one *obi* is narrower than another. There is a kind called Hara-awse, in which two kinds of cloth are used. Another kind is called *Kujira obi*, in which one half of the breadth is spotted and the other half is not, and it is stitched. There are similar kinds used for first-class *obi*.

(155.) Hoso-obi.

(156.) Uwagi (of cotton, with satin collar).

The method of making, etc., is the same as for first-class ones.

(157.) Shitagi (of cotton with satin collar).

(158.) Jiban (of silk).

(159.) Shitajiban (of cotton).

(160.) Tabi (of cotton).

(161.) Koshimaki (skirt).

Common Summer Clothes for Men.

(162.) Hawori, of Ro. (silk gauze).

The method of making this is the same as for winter clothes, the only difference being that it has no lining, and generally certain light materials are used; in other respects, there is no difference to note.

(163) Hakama, of *Kaheiji* (silk manufactured for making Hakama only).

(164.) Kimono (of linen).

Summer clothes, made of linen are called *Katabira;* of silk, *Hitoyemono,* and of cotton *Yukata.*

(165.) Jiban (of linen).

(165.) Moji-jiban (under-shirt made of Moji).

Moji is a gauze made of linen, and *Moji-jiban* is gauze woven in the form of a *jiban,* to which sleeves are added. This is used for preventing the Uwagi from coming into contact with the skin when the wearer perspires.

Common Summer Clothes for Women.

(166.) Obi.

In comparison with a winter obi, it is narrower; those made of Ro are not used in ordinary attire.

(167.) Kimono (of striped thin silk).

(168.) Jiban (of red hemp, having narrow sleeves).

Winter Clothes for Male Children.

(169.) Uwagi (coat made of crape, with crests and figures dyed).

(170.) Shitagi (two under-coats made of crape called Yuzen).

(171.) Jiban (shirt made of silk, called Habutaye, with reddish yellow crape sleeves).

(172.) Yodarekake (made of pink silk).

(173.) Kinchaku (ornamental round pouch carried round the waist).

Winter Clothes for Female Children.

(174.) Uwagi (coat made of crape with crests and figures dyed).

(175.) Shitagi (two undercoats made carmine red crape).

(176.) Jiban (shirt made of pink silk).

(177.) Dzukin (of red crape).

This is made like a *Fukudzutsumi* (a precious bag) placed upside down. It is also called *Daikoku.* It is worn on the head, like caps are worn in foreign style.

Clothes for Baby—Superior Quality.

(178.) UWAGI (coat made of white silk called Habutaye, lined with the same stuff).

(179.) SHITAGI (under-coat made of pink silk).

(180.) JIBAN (shirt made of pink silk).

Clothes for Baby—Inferior Quality.

(181.) UWAGI (coat made of pink cotton cloth).

(182) SHITAGI (under-coat made of light blue cotton cloth with hemp leaf-shaped figures).

(183.) MUTZUGI (*diaper* made of white and light-blue cotton cloth).

Styles of Dress. (Represented by Dolls.)

The names of the dresses and their materials are described in the following lines, but their details are given elsewhere:—

(184.) A COUPLE OF HIGH OFFICIALS IN THE IMPERIAL COURT DRESSED IN ANCIENT COSTUME.

Husband.

Kammuri (a kind of hat), is made of a kind of gauze.

Ho (coat), is made of black silk, figured damask, and lined with Heiken, a kind of silk.

Shitāgasane and *Suso* (under-coat and skirt) are made of white damask.

Akome and other articles are the same as described above (No. 1–17, Group. III.).

Wife.

Karakoromo (upper coat), the cloth is woven fabric with raised figures.

Omote-ginu (coat). The cloth is light-green woven fabric with raised figures.

Itsutsu-ginu (under-coats), *Hitōye* (thin dress like shirt), *Akauchibakama* and *Mo* are described above (No. 43–46, Group III.).

The hair is dressed in the *Sagegami* style.

(185.) A COUPLE OF THE ANCIENT SAMURAI CLASS, WITH THEIR DAUGHTER, DRESSED IN COURT COSTUME.

Husband.

Noshime (a court costume worn under *Kamishimo*). The colour is *Kachin* (bluish-green); there are three crests of Paulownia Imperialis.

Kamishimo (court costume). The colour is grey; the trousers are of Machidaka-Shitate (that is, only a narrow slit).

Shiromuku (under-coats of white silk cloth).

Jiban (silk under-shirt).

Swords, long and short.

Tabi (socks).

A form of hair dressing, called Hampatsu.

Wife.

Uchikake (black crape with patterns on white body).

Aigi (red crape coat).

Shitagi (under-coat of white Habutai-silk fabric).

Obi (satin belt, quilted with gold thread).

Obidome (red crape tightening belt).

Hakoseko (ornamental case).

The hair is dressed in the Katahadzushi style, with tortoise-shell hair ornament and silver hair pin.

Daughter.

Obi (belt of silk fabric).

Obidome (upper tightening belt of red pleated silk).

Obiage (belt-fastening ribbon of red crape).

Uwagi (wide sleeved upper-coat of violet crape).

Shitagi (under-coats, one is red crape and the other is white Habutai-silk fabric).
Jiban (under-clothing of white silk).
Kedashi (petticoat of white silk).
Tabi (socks).
The hair is dressed in the Kamuromage style, and the following ornaments are attached:—
Takenaga (imitation of silver made of paper).
The manner of dressing of the wife and daughter is adapted to the present time.

(186.) A Couple of Well-to-do People in Ordinary Attire.

Husband.

Hawori (upper coat of silk cloth dyed grey, to which cords and silver ornamental piece are attached).
Hakama (trousers of Sendaihira, silk cloth produced in Sendai), lined with Kaiki-silk cloth produced in Kai.
Obi (belt of Hakata-silk cloth).
Uwagi (silk upper-coat lined with silk).
Shitagi (under-coat of Hachijo-silk).
Jiban (under-shirt made of silk and crape).
Tabi (cotton socks).
Komageta (wooden sandals).

Wife.

Obi (belt of Hakata-silk fabric).
Obi-age (red crape belt-fastener).
Obidome (upper tightening flat belt, with metallic slides).
Koshiobi (under belt of violet satin).
Uwagi (crape upper-coat lined with silk).
Shitagi (crape under-coats).
Kedashi (crape petticoat).
Jiban (silk under-clothing lined with silk).
Tabi (socks same as those for males).
Komageta (wooden sandals). The hair is dressed in the Marumage style, and the following ornaments are attached.
Negake (paper cord for hair ornament).
Hangake (red crape for hair ornament).
Kanzashi (silver hair-pin ornamented with coral ball).
Takenaga (imitation of silver made of paper).

(187.) A Couple of Tradesmen Dressed in their Ordinary Clothes.

Husband.

Hawori (silk upper-coat lined with silk, and a silk cord is attached).
Obi (silk belt).
Uwagi (upper-coat).
Shitagi (under-coat of cotton).
Jiban (under-clothing).
Tabi (cotton socks).
Komageta (wooden sandals).

Wife.

Obi (belt made of lining satin and silk).
Uwagi (upper-coat of Kenchiu-silk, lined with deep-blue silk).
Shitagi (under-coat of pongee).
Kedashi (white crape petticoat).
Tabi (socks).
Komegata (wooden sandals). The hair is dressed in the round, and the following ornaments are attached to it:—
Comb of tortoise-shell.
Kogai (tortoise-shell hair ornament).
Negake (paper piece for hair ornament).
Kanzashi (silver hair-pin).
Tegara (violet crape cloth for hair ornament).

(188.) A Couple of Farmers Dressed in Working Dress.

Husband.

Uwagi (cotton coat lined also with cotton).
Jiban (cotton under-clothing).
Hawori (cotton upper-coat).
Obi (cotton belt).
The hat is worn on the top of the head; he wears straw sandals, carries a hoe in hand, and wears a sickle around the loins.

Wife.

Uwagi (striped cotton coat).
Jiban (spotted cotton under clothing).
Hawori (cotton upper coat without sleeves).
No hat is worn on the head, but the hair itself is tied up; she carries the bamboo basket for collecting hay, and has a sickle in hand.

(189.) A Workman Dressed in a Working Dress.

Hanten (single upper-coat). This is made of black cotton cloth with a Chinese character in white.
Shitagi (single under-coat). It is made of black cotton.
Harakake (breast cover of black cotton).
Momohiki (black cotton pantaloon).
Sanjaku-obi (a kind of cotton belt). The length is three *shaku*, and breadth is the breadth of the cotton itself.
Tabi (black cotton socks).
Zori. Sandals, imitation of Asaura, straw sandals with soles made of hemp.

(190.) Patchi (a kind of silk trousers).

The material used generally is a kind of silk cloth, called Hanairo (dark blue colour), both the right and wrong sides of the cloth being the same, but sometimes *kaiki* (silk) is used. The method of making them is by measuring the length round the loins down to the ankle, and then sewing together. The work is finished after turning and sewing.

The method of wearing them is much the same as that of wearing other trousers, but they are tied over the stomach with a cord.

They are worn for walking in the street, and when walking the skirt of the dress is tucked up.

Patchi is said to be a Corean word, hence it is supposed that patchi was introtroduced from Corea to Japan.

(191.) Momohiki (kind of cotton trousers).

The material usually used is blue cotton cloth. They are made in the same way as Patchi, but fit more tightly than the latter, and in the lower part there are two cords, by which they are tied up. There are two kinds, single and double. They reach from the waist to the knees, consequently certain persons use Kiyahan (leggings) below the knees. *Momohiki* are used by labourers and travellers. Recently, they have been made of linen woven in foreign style, and nobles as well as the lower class of people wear them as every-day garments.

(191.) Momohiki, of Unsai (thick cotton cloth).

(192.) Kiyahan (leggings of black cotton cloth).

The material used is the same as that for momohiki; the *Kiyahan* is used for covering the calves of the legs, and cotton cords are attached to the top and bottom of them; in some kinds there are cords on the top only, the lower part being secured with clasps. They are only used when travelling.

(193.) Kiyahan, of silk, lined with cotton, for women.

The method of making them is the same as above, and clasps are used to fasten them instead of cords.

(194.) Kōkake (a kind of socks without soles).

It is made of dark-blue cotton cloth quilted with cotton thread of the same colour. The method of making it and the shape are same as Tabi, but without soles. This is only used by a lower class of the people when travelling.

(195.) Tekko (a kind of gloves).

This is made of dark-blue cotton cloth lined with the same material of lighter colour. Its use is the same as (194.).

(196.) Tekko (a kind of gloves for women, made of pongee of grey colour).

(197.) Harakake (a covering tied over the chest and abdomen).

In the first place, the length between and the breadth of the upper part of the ribs and stomach are measured, and the materials for the outside and the lining are cut into the requisite sizes, after which it is sewn together and a pocket made in the lower part of the breast. This garment is used by workmen and the like. There is a kind of *Harakake* for children, which is called *Gusoku Harakake*; it is worn by the nobility as well as the middle and lower classes.

(198.) Dōgi.

This is a wadded coat with sleeves of pongee, lined with calico, and worn outside the other clothes in cold weather.

(199.) Saruko.

It is made in the same way as *Dogi*; but it is generally smaller than that dress, and has no sleeves, so that it is easily put on and taken off. It is a kind of winter dress.

(200.) Tsutsusode-Jiban (a cotton under-shirt of thick cotton cloth).

It is the same as a common Jiban, but the sleeves are narrower.

(201.) Sōjiuro (head covering of crape).

The material used is generally black crape, and this is lined.

It is $2\frac{1}{2}$ *shaku* long; part is sewn into the shape of a bag and the other parts are made separately.

It is worn on the head, and the loose portions are wound round and tied in front.

(202.) Yamaoka (a head covering of silk).

Two pieces of cotton cloth of about 2 *shaku* long are sewed together, making the form of a mound at the back. It is also called *Kakushidzukin*. It has two cords by which it is tied.

(203.) Funazoko (a head covering of cotton).

The shape of this is like that of a capsized ship, being wide in the middle and narrower at the ends. The method of wearing it is to cover the head with it, and then tie it on with the ends.

(204.) Okoso (a head covering of crape for women).

It is made of the whole breadth of crape, and two silk loops are fastened on the inner side. The method of wearing it is to cover the head with it, and the two loops are passed round each ear, then the hanging parts are tied together.

(205–206). Comb.

Formerly this was only used for combing the hair, but recently it has become one of the hair ornaments, and every woman puts one in her hair. The best are made of tortoiseshell, but women of the lower classes use the horse nail imitated as the former. Besides these there are combs made of sandalwood, boxwood, gold, silver, &c.

(207–211.) Kanzashi (ornamental hair pin).

The word Kanzashi means to "place between the hair," and is used to designate one of the ornamental pins for fastening on hair.

(212–213.) Scarf Pin.

This is an imitation of a foreign manufacture.

(214.) Ladies' Reticule.

This is an imitation of a foreign manufacture, and is used to carry any portable articles.

(215 & 216.) Pouches.

They are used for carrying papers, coins, medicines, &c., when walking, and are thence called pocket articles; those for ladies are smaller in size.

(217.) Paper-money Case.

This is a pocket case for carrying paper-money.

(218.) Card Case.

Used for carrying visiting cards, as in Europe.

(219.) Coin Case.

A pocket case for carrying copper coins.

(220.) Incense Case.

A pocket case for carrying incense articles. Used by ladies.

(221.) Kodzutsumi (a silk bag containing incense).

This is a bag made of silk in several shapes, and contains perfume; its mouth is tied up with *Taihaku* (silk thread) of several kinds. This is carried by women, and emits a pleasant scent.

(222.) Match Case.

This is made of paper, and is used only for carrying matches.

(223.) Pocket Toilet Service.

This is a toilet service made for convenience of transportation.

(224.) Niwoibukuro (perfume case).

A small silk case of 1·5 *sun* square, in which perfume is put; it has ornamental silk tassels. The method of making it is almost the same as that of making the preceding article, but a metallic ring is attached to one of its ends.

(225.) Tooth-pick Holder.

This is used only for holding tooth-picks; its shape and materials are various.

(226, 227.) Koshizashi (tobacco pouches).

The tobacco pouch and pipe case are fastened together with silk cord, and carried by tucking the pipe between the belt.

(227A.) Koshisage (tobacco pouch).

Tobacco pouch and pipe case are connected by a silk cord, to which a *Netsuke* (kind of carved button) is attached, and is fastened to the belt by means of the Netsuke.

(228.) Tamotomochi (pocket tobacco pouch).

This is an oblong bag with a piece of metal attached.

(229.) Kuwaichiu (pocket tobacco pouch).

An oblong bag larger than *Tamotomochi*, with a piece of metal attached.

(230.) Kamasu (a larger kind of tobacco pouch).

Made in the same way as the two preceding ones, but has no piece of metal.

(231.) Cigarette Case.

Made in the European style.

(233–235.) Pipes.

This is made usually of brass or iron, or sometimes silver or gold.

(236) Pipe case.

Made of paper, rattan, wood, &c.

(237.) Imitation Leather or Papers for making Tobacco Pouches.

They are Mino papers (papers manufactured in Mino), and dyed several times; two sheets of such paper, after being made soft by rubbing, are pasted, and, after being coated with oil from the seeds of a certain plant, finished by drying.

(238–248.) Fan.

The ribs are usually bamboo covered with paper; but ivory covered with silk is used for the best kinds.

(249–253.) Round Fan.

Used in the same way as the ordinary fan.

(254.) Shirushi-banten (a gown of black calico, having a certain mark on).

The material generally used is calico of a deep blue colour. The method of making is very similar to that of Hawori, the sleeves are very narrow, and it has neither Tamoto (pocket in the sleeves), gore, nor strings. On the back a crest of some character is left white from the dyeing. It is used by artisans or labourers, and is worn in the same way as a *Hawori*.

(255.) Kawabawori (a leather coat).

Made of leather of a green or tea colour, and is made up in the same way as a Hantan, but it has strings. It is worn by foremen of workmen and the like.

(256.) Kappa (a rain coat of pongee lined with Kaiki).

The material used is woollen cloth, but pongee is used for making the better kinds. The method of making is the same as Kimono, although it has no Okumi, and the collar is very short; the length is almost equal to that of the body, and in front there are cords called *Shozoku-himo* to fasten it. It is worn over the Uwagi, and is tied with cords. There is also *Hangappa*, whose length is the same as Hawori. Its style and shape are the same as above. Both of these are mostly not water proof. Kappa is the imitation of a Portuguese garment, and it has been said that the word Kappa has been derived from that country.

(257.) Kappa (of pongee, with velvet collar, for women).

This is nearly the same as men's, but is a little longer than theirs. There is no *Okubi*, and velvet is used for the *Yeri* or collar. The method of wearing is the same as that of males, with one difference, viz., that it is tucked up around the loins and is then tied by a small string.

(258.) Hikimawashi Kappa.

A kind of rain coat, made of striped calico with a cotton lining.

It is made circular, very broad at the lower part, but not gathered up. It is fastened in front with strings.

(259 & 360.) Komageta (wooden clogs).

The material for making them is commonly *Kiri* (Paulownia Imperialis), and upon them matting is nailed; the thongs are either of *Yawatagura*, *Santome* (leather) *Kokura* (cotton), &c., for men's, and velvet for women's. Women's clogs are sometimes lacquered. The fore part of the thongs is inserted between the great toe and the next one.

(261 & 262.) AMAGETA (wooden clogs used in wet weather).

The material they are made of is the same as that for Komaketa; three holes are made in the clog for the end of the thong and for the piece that holds the thong in front; two pieces of planed wood are inserted in the bottom of the clog. There are two kinds of this variety of clog, one is higher and is used only in very rainy weather, while the other stands lower, and is used in both rainy and fine weather. The thongs used are the same as those used for Komaketa, and the upper part is covered with *Mayekawa* or *Tsumagawa* (black oiled paper) to protect the foot from wet and dirt.

(263–264.) SETTA (Sandals).

The upper side is made of a kind of rush, and the under side is made of ox leather and is furnished with iron heels. There is not much difference between sandals for men and for women. The thongs for men's are made of leather and for women of velvet. *Setta* were invented by a famous tea dealer named Sen Rikin, and were used only in fine weather. Their use has much decreased.

(265.) ZORI of Asaura (Sandals).

The upper side is made of Migo (straw), and at the heel there are hempen cords fastened on with hemp thread. The thongs are made of the inner substance of the Kiri tree, covered first with paper and then with cotton cloth and finally sewed. In the middle of the thong is tied the hempen cord covered with paper which is fastened to the sandals. Zori are chiefly for indoor wear.

(266.) ZORI of KAMIWO (paper thongs).

They are made of straw, with paper thongs, or the inner substance of the Kiri tree, covered with paper. In comparison with Asaura they are easily made.

(267.) ZORI of BAMBOO SHEATH.

They are made wholly of bamboo sheath; their use is the same as that of other kinds of Zori.

(268.) WARAJI (kind of straw sandals).

The material used is straw and straw rope; the method of making them is to interweave with straw on each side of the sandals; there are two projecting loops, covered with paper, but in the common kinds paper is not used at all. In putting them on, the straw strings attached to the sandals are passed through the loops and are tied upon the feet with these strings.

(269–277.) BOOTS AND SHOES.

The boots and shoes which are exhibited are the reproduction of foreign ones.

Bedding.

(278) YOGI.—*Superior Quality.*

A very thick kind of bed quilt made of crape lined with silk; to which velvet is sewed. It is made in the form of a very large garment. The outside requires 28 *shaku* of crape, and the inside 42 *shaku* of silk; certain parts of the inside surface are turned over to the outside one (instead of using Sodekuchi), that is the pieces of silk cloth added to the mouth of both sleeves in their inside surface. They are lined with a large quantity of cotton. They are quilted here and there to prevent the cotton wadding from slipping. The *yogi* is a kind of bed quilt used in very cold weather.

(279) KAIMAKI.

A bed quilt made of crape lined with silk. The shape, &c., of it is just the same as that of *yogi*, but it is a little thinner and smaller. This is spread under the *yogi*.

(280) SHIKI-BUTON (Mattress of crape).

It is made by sewing together two or three pieces of crape of a certain width, and of the length of about 5 *shaku*; it is lined likewise with crape of the same measure, between which cotton is put. This is spread down at bed-time.

(281) Yogi, of pongee.

Of coarse silk cloth with certain dyed figures on it, lined also with coarse silk without figures. This is just the same as the preceding kind of Yogi, differing only in the coarseness or fineness of the material.

(282) Kake-buton, of pongee.

A small quilt of pongee for spreading over the body or yogi. It is made in the same way as Shikibuton, but five pieces of material of a certain width are required.

(283) Shikibuton, of pongee.

(284–285) Yogi and Shikibuton, of Calico.

They are used by the lower classes of people. The materials used are much inferior to those mentioned above.

(286) Makura (pillow) called *Denchiu.*

This kind of pillow, called Denchiu, is the one used by the upper classes and in palaces, from which its name is derived. It is made of wood, lacquered black, and is narrow in the middle and broad at the upper and lower parts. A small bag filled with *Hiye* or *Soba* (chaff), sometimes with cotton, and called *Komakura* (meaning a small pillow) is laid on the top of it.

(287) Makura, known as *Funazoko.*

This is a kind of box made of *Kiri* or *Kuwa*, and the bottom of it is made of a bow shape. There is another kind which is made like a *Funozoko*, only the bottom is flat. Besides these kinds of pillows, there is another kind called *Kukuri*; it is a large kind of *Komakura*, and is vulgarly called *Bozu-makura.* It was especially used in former times, but is now coming into use again.

(288) To-Makura or Rattan Pillow.

Made of rattan, and its shape is same as that of a common one; it is mostly used in summer.

Mosquito Nets.

(289 & 290) Kaya, mosquito nets.

The material commonly used is hemp dyed green, but one exhibited here is made of silk gauze, with red crape in the edges.

As to the method of making them, cloth of a fixed breadth is cut into many pieces, each about 4 *shaku* long. Each length is sewed to another by joining these pieces at pleasure, and in the four corners metallic rings are sewed, and on the edges certain decorations are made; the decorations are made on the lower side with crape. *Kaya* are used to keep off mosquitoes in summer time. The lower classes make them of paper, and call them paper nets.

(291) Round Horogaya, a mosquito net for babies.

A certain number of bamboo sticks are fastened together by hemp cord and made into the form of a bow, which is folded at pleasure and covered with light blue silk gauze, laced with red silk, to protect infants from mosquitoes. It is very handy, and can be moved to any desired place.

(292) Oblong Horogaya.

Something like frameworks are also made of bamboo sticks, and are of an oblong shape. The cloth which covers them is light blue linen. Use same as above.

(294–295) Sample of Materials used for Clothing.

Two books containing pieces of several kinds of silk, cotton, woollen goods, flannel, &c., and arranged for convenience of selection.

Class XIV.

WATERPROOF CLOTHING.

(296) Marugappa, water-proof coat of oil paper.

It is made of Otaka-gami (thick paper), smeared with oil from seeds of plants. It is sewed not in the form of Japanese clothes, but somewhat of a round shape. This is a garment used in rainy weather.

(297) Kakusode-Kappa, water-proof of oil paper, with square sleeves.

It is sewed in the form of common Japanese clothes, such as *Hawari*, &c.; the use is same as the above.

(298) Tsutsusode-Kappa, water-proof of oiled paper, with narrow sleeves.

It is sewed in the same way as *Kakusode*, but the sleeves are narrower; it is worn over the narrow sleeved dresses.

(299) Dzukin, a head-wrapper of oil paper.

It is made in the same shape as *Yamaoka* (before referred to) and is used to protect the head from rain.

(300) Janome-Karakasa, a kind of umbrella.

Method of Manufacture.—Young bamboo wood is prepared by taking off the joints and then planing down. Two kinds of bamboo stays, one short and the other long, are made, and these short ones are joined at one end to the middle part of the long ones with silk thread, and the other end is joined to the *Rokuro*, or ring. The opening and shutting is accomplished by means of the ring, spring, &c. *Kondosa* (deep blue paper) is pasted on the stays with the starch of *warabi*, white lines of paper are made in the centre, to which the oil of *ye* (seed of Perilla Ocymoides) is applied. Some are covered with a piece of oiled paper at the apex and some are not. It is water-proof and is one of the most important articles of daily use. *Janome* is the name of one of the best kinds of umbrella.

(301) Bangasa, inferior kind of the above.

The process of making it is the same as the above, but the materials used are much inferior.

(302) Daikokugasa, the commonest kind of umbrella.

This is the commonest kind, and the workmanship is comparatively rough.

(303) Mino, a rain-coat made of Kugo-grass.

It is made by drying, washing and cutting *kugo* into threads, which are plaited with the hands or by means of an apparatus. On the inside there is a kind of net fastened to it; a certain part of it is left unplaited and hangs down like long hair. Two kinds of straw belts hang down from the shoulder to the lower part of the arm pit. These belts are called *Kakaye.*

(304) Mino, a rain-coat made of rush.

The difference between this kind and the above is that the materials are inferior.

(305) Takenoko-gasa, a rain-hat made of bamboo sheath.

(306) Ajiro-gasa, a rain-hat made of bamboo network.

(307) Suge-gasa, a rain-hat made of rush.

Class XV.

UMBRELLAS FOR SUN.

(309) Rioten, umbrella, suitable for sun or rain.

The mode of making is same as above, but the colour of the paper is black, and is oiled, and lacquered blue outside. Its chief use is to ward off sunshine, but it may also be used to keep off rain.

(310) Higasa, Japanese umbrella.

Short bamboo stays are joined with silk thread into the middle part of longer ones, like foreign umbrellas. There are handle, spring, pulley, &c., belonging to it, as in the umbrella used in rainy weather, with the difference that it is made of deep blue coloured paper, but no oil is applied. This kind is specially used by females.

Class XVI.

FALCONER'S DRESS.

Falconers belong to a special class of the community, and their business is to catch certain birds with falcons. They wear a peculiar kind of dress, and have a cane at their side and carry a perch in the left had.

(311) Michiyukiburi (a kind of overcoat).

This is much like the Kappa (water-proof), but is about 2½ *shaku* shorter. It is tied on by means of cords and loops. In the middle of the back there is a small hole through which the cane above mentioned passes, besides which there is another hole through which to pass the sword. It is worn over the *Hanten*, and is used only for falconry. On ordinary days they wear common *Hawori*, gowns are worn and also *Bandori*, which is nearly like *Michiyukiburi*.

(312) Hanten (gown).

The material used for this garment is usually cotton; its shape does not differ from an ordinary coat, but it is much shorter, as it only reaches as far as the knee.

(313) Momohiki (tight trousers).

The method of making these is just the same as that of the ordinary kind and they are worn in the same manner. In ancient times, when people of the *Samurai* class travelled they wore such Hanten and Momohiki.

(314) Tabi (socks).

These socks are the ordinary kind, but are quilted; the sole is sewed on with hempen thread. They are tied on by means of a cord and a loop. When wearing these socks, no straw sandals are required, but on long walks cotton sandals are used.

(315) Dzukin (head wrapper).

This is made of cotton, and is 8 *sun* wide and 6 *sun* long; it is lined with cotton of the same size.

(316) Towel.

Cotton cloth of one *shaku* broad and 3½ *shaku* long.

(317) Sanjaku Obi (belt).

This is a linen cloth 3 *shaku* long and 1 *shaku* broad, folded four times lengthwise.

Falconers wear the common belt, and this *Sanjaku-Obi* is also worn over it to secure it.

Class XVII.

FIREMAN'S DRESS.

(318) Dzukin (helmet).

It is made somewhat like the shape of an ordinary helmet, having lappets. It covers the head and face completely, leaving two holes for vision; the material is a cotton cloth of dark blue colour, and is quilted with cotton thread of the same colour which is called *Sashiko.*

(319) Tsutsusode-hanten (coat with narrow sleeves).

Its shape is almost like the ordinary Hanten — differing only in having narrower sleeves. The material used is cotton, with the figure of a dragon. It is quilted in the same way as *Dzukin*, and hangs down to the loins.

(320.) Naga-hanten (long coat with wide sleeves).

It is made of the same stuff as No. 319. The only difference is that it is long and has wide sleeves.

(321.) Hanten (short coat).

This is made of the same stuff as No. 319.

(322.) Harakake (a covering tied over the chest and abdomen).

It is made of dark blue cotton, and in exactly the same way as No. 147.

(323) Momohiki (tight trousers).

Made of quilted cotton cloth with the dyed figure of a waterfall and Koi (river fish). Wórn by firemen.

(324.) Tebukuro (Gloves).

These are made of dark blue canvas and quilted with cotton thread of the same colour.

(325) Tabi (socks).

Made of a thick dark blue cotton cloth called Unsai. Their length is about 8 *sun* from the soles. The soles are made of flax thickly interwoven and sewed up with flax. They are worn instead of shoes by firemen when extinguishing conflagrations.

GROUP III.—THE DWELLING-HOUSE.

Class XX.

Models of Dwellings.

(1.) Model of a Private Residence of Common People, with a Portion of a Garden belonging to it, made on a Scale of $\frac{1}{20}$ of Natural Size.

The main roof is covered with tiles, which are pointed with lime as shown by white lines on the model; and the low or secondary roof is of shingle (the shingles themselves are exhibited in the Japanese Court, Group 3, Class 28, No. 133). The following are some of the principal things shown by the model:—(*a*) is the main entrance with a wooden lattice sliding door; (*b*) the private or family entrance with an ordinary sliding door (which is known as *Amashoji*); (*c*) the kitchen entrance with ordinary sliding door; (*d*) the parlour; (*e*) study; (*f*) dining room; (*g*) bed-room; (*h*) bath room; (*i*) waiting room; (*j*) kitchen; (*k*) a room in the top floor which may be used as a parlour, dining room or bed room as the case may be; and (*l*) and (*m*) are w.c. In the inside of each of the sliding doors for entrances (*a*) (*b*) (*c*), there is a small space left for the purpose of taking off boots and shoes before entering the house. The partitions between the rooms are of what the Japanese call Karakami, *i.e.* a wooden frame covered with paper (a specimen of these partition-doors is exhibited in the Japanese Court, Group 3, Class 29, No. 141.) The floor is of the mat exhibited here (see Group 3, Class 29, No. 139).

(2.) Model of a Ceremonial Tea-Drinking (Cha-no-yu) or a Tea-Party Reception Building.

This is a model of a building and of a garden belonging to a certain gentleman now living in Tokio. The model is $\frac{1}{20}$th of natural size. (*a*) is called Roji, where the tea party enters; (*b*) is a room in which the guests rest when they arrive; such resting room is only built for the sake of especial courtesy, as at an ordinary party there is no such apartment; (*c*) is a closet; (*d*) is called *Machiai* or waiting room, wherein the guests wait for the master to come out and welcome his guests: this room cannot be omitted at a Cha-no-yu. In this building as well as in (*b*) there are *Tabakobon* (fire box for lighting pipes) set out; (*e*) is called *Tsukubai*, and by its means each of the guests must wrinse out his mouth before entering the tea room; this is an essential of the ceremony; (*f*) is called *Nijiriguchi*; it is the entrance through which the guests enter the tea room; (*g*) is the tea room proper: in it the guests sit down, the part where the *Tokonoma*, *i.e.*, that part of a Japanese room which is raised a few inches above the floor, is considered the seat of honour; (*h*) is the *Tokonoma*, where a scroll or a picture hangs, or where a vase of flowers is set; and sometimes both pictures and flower vases are set; (*i*) is the seat for the master of the house, who prepares the tea; (*j*) is the fireplace fixed in the floor, in which are ashes, an iron tripod and an iron tea-kettle: this place is, in summer time, covered with matting, and a portable furnace is placed in its vicinity; (*k*) is a shelf on which to put tea things, according to circumstances; (*l*) is called *Furosakimado*, and is a window in front of the furnace for light; (*m*) is called *Kayoiguchi*, the entrance through which the food, drink, &c. are brought in to place before the guests; (*n*) is the *Sadoguchi*, the entrance for the master only at the time at which he prepares the tea; (*o*) is the *Oshiagemado*, or window; (*p*) is the *Midzuya*, or room for preparing the tea things; (*q*) is a shelf on which to arrange the tea things; (*r*) is the place at which to wash the tea things, and to throw dirty water into; (*s*) is a movable cover under which the charcoal necessary for boiling the water is kept; (*t*) is called *Kazariyane* (ornamental roof).

(3.) Model of a Shop and its adjoining Store-House.

This is a model, $\frac{1}{20}$th of the actual size of a dry goods store, &c. (*A*, is the shop, in which the merchant sells his goods; (*B*) represents the *oroshido* (doors) which are raised up to the roof in the day time, but are lowered when the shop is closed at night; (*C*) is called *Shikimi*, a grooved beam that receives (*B*) when put down; it is removed during the day time; (*D*) is the upper beam by which (*B*) is secured so as not to fall down after it is raised up; (*E*) is called *Daikoku-bashira* (main pillar), by means of which the whole building is almost entirely supported; it is the largest pillar in a house; (*F*) is a shelf for keeping goods on and for arranging them for sale; (*G*) is a shelf on which miscellaneous articles are kept; (*I*) are the stairs, with drawers under them by which to reach the second story; (*J*) is a copper guttering; (*K*) is the second story, a room in which to receive or entertain guests but not buyers generally; (*L*) is the entrance to the garden; (*M*) is a lattice work door forming the egress and ingress for the family; (*N*) is the kitchen; (*O*) is the *Nagashi* (scullery or sink); (*P*) is a sliding skylight; (*Q*) is the parlour or dwelling room of the family; (*R*) is a fire-proof building (from the outside); (*S*) is another staircase; (*T*) is one of the leaves of the door of the fire-proof building; (*U*) is a stone to be fitted to the opening for ventilation of the lower part of such a safe or building; (*V*) is a lattice work door fixed at the entrance of this safe; (*W*) is the earthen door which is shut in place of the lattice work one; (*X*) is the upper compartment of the fire-proof building; (*Y*) is the window of the fire-proof building; this has also a lattice work window and is much smaller than (*V*); (*Z*) is a receptacle in which to keep wet clay, with which to plaster up the chinks of doors and windows of the fire-proof building after they have been shut, when there is a fire; (*a*) is a passage for admission in front of the fire-proof; (*b*) is called *Nureyen* or portico; it projects from the room and usually receives the rays of the sun as also the rain; (*c*) is a guttering to carry off the rain; (*d*) is an opening for ventilation and can be closed with the stone (*U*); (*e*) is called *Koshimaki*, and is a wall made of pebbles mixed with cement, and forming a hard structure; (*f*) is a wooden fence; (*g*) is a frame-work fence called *Komayose*; (*h*) is a square tube for drainage; (*i*) is a furnace on which to put an iron boiler; (*j*) is another furnace on which to boil fish, vegetables, &c.; (*k*) is an urn for water; (*l*) is a mortar for kitchen use; (*m*) is a copper gridiron on which to broil various kinds of food; (*n*) is a bamboo basket for carrying vegetables; (*o*) is an earthenware bowl in which to put small quantities of Sake, Soy and like fluid substances; (*p*) is an earthenware bottle to put Sake in; (*q*) is an earthenware plate for fish; (*r*) is an earthenware bowl for vegetables; (*s*) is a tinder box with flint, steel and accessories; (*t*) is an earthenware basin, known as a *Konomono-sara*, for salted or pickled vegetables; (*u*) is a small square earthenware plate used for certain kinds of food when taken from large vessels; (*v*) are horse-radish graters; (*w*) is a *Chobagoshi*, or lattice work screen, to place in front of the shop-keeper in the shop. Besides these, *Noren*, usually of cotton cloth with certain special patterns, is hung in front of the shop.

(4.) Model of a Farmer's Dwelling House, made on a scale of $\frac{1}{20}$ of the actual size.

The main roof is of thatch of straw and the secondary roof is made of the bark of cedar or spruce (see Group 3., Class 28, Nos. 134 & 135), which are very common among farmers' houses in Japan.

In the house, there are three rooms fitted with mats and which may be used as parlour, bed or dining rooms, besides the kitchen and a court belonging to it. In the kitchen, there is an open fire place marked (*a*), and suspended from the beam above there is a sliding rod with a hook at the end for hanging boilers, kettles, &c. The fuel which they consume is generally wood and sometimes charcoal. The main entrance marked (*b*) opens by a hinge-door, with a smaller entrance for night admission when the main entrance is closed. The entrance marked (*c*) is a private or secondary one; aside from the main entrance is a bamboo grating used as a plate rack, and on the other side there is a shelf on which anything may be temporarily placed. The inclosure and partition-walls are of Kabé, as shown in models Group 3, class 28, No. 131; and between the rooms are sliding-doors called Karakami, consisting of a wooden frame covered with paper and finished with a sort of wall-paper (see Group 3, class 29, No. 141). (*f*) is a w.c., easily accessible from the bedrooms. The windows and balconies are shut at night with wooden blinds.

Model of a Stable belonging to the Farm.

The roof is of thatch of rough finish, and the walls of enclosures are of Kabé, as above-mentioned; (*a*) is the stable proper; (*b*) the store for keeping hay and grass, and any thing not actually in use.

(5.) Model of a set of Tenements for the Poor, showing the General arrangement and Fittings in the Compounds.

(*a*) is the common entrance, (*b*) the main drain, into which the other house drains run. On both sides of the courtyard there are two rows of houses which are separated into a number of compartments. In each compartment there is a living room and a kitchen; on the kitchen side there is a pavement where the people take off boots and shoes. At each end of the row of houses there is a compartment somewhat larger than the rest, and in this the principal occupant or the head labourer generally resides, and looks after the property; (*c*) is the well, (*d*) the w.c.; and (*e*) the dust bin; (*f*) is a platform whereon they dry clothes. At night the entrance doors are shut with screens, which are usually kept on the side at daytime, as at (*h*); (*g*) is the weather cock. In case of fire in the neighbourhood, the people look at once at this indicator, to see if their houses are on the lee side or to the windward of the fire; and if the direction of the wind is unfavourable, they make haste to get out their little household furniture.

(6.) Paper Models of Tea Party Reception Building.

There are several kinds of models of such building, but it can hardly be understood by a single glance. Paper models are exhibited to show the construction. The dimensions as well as the arrangement of the windows are not made regularly, but as convenience and taste direct.

Class XXI.

Water Supply.

(7.) Map of Tokio, showing the Water Mains from the three Courses, Tamagawa, Kanda, and Senkawa.

7A) Report on the Water Supply of Tokio by Watanabe Jun, an Officer of the Tokio Municipality.

In accordance with the order of His Excellency Matsuda Michyuki, Mayor of the city of Tokio, I have the honour to compile a short history of the water supply of that city. The contents of this paper refer to its condition both previous to and subsequent to the Restoration of the Imperial Government (1868). There is, however, very little known with respect to the period before 1868, and there are hardly any means of determining the date of the establishment of waterworks, or to give the results of their working.

The following chapters are taken from the official records on the subject. I sincerely trust that my readers will kindly excuse any deficiencies in the way of clearness of expression, and the imperfections of which I am only too conscious.

WATANABE JUN,
An officer of the Tokio Fu.

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CHAPTER I.

History of the Tokio Water Supply.

In the times of Shogun Tokugawa, Tokio was made the capital city, and where the ground was low and swampy, there the water was either impure or somewhat salt, and was not fit for drinking purposes. And where the grounds were high there it was unfit for boring wells owing to the nature of the soil. Owing to these difficulties the population had great trouble in getting water for drinking, and the water in ponds or in marshes had to be used as the sources of supply. But as this water sometimes dried up and was besides very impure, it could not be used for a permanent supply. The Shogun Government thereupon had the water brought by the Kanda *josui* or conduit (the date of this is unknown, see Chapter III.), and during the period of the years of Showo (1652), the water was drawn from the river Tamagawa, which runs beyond Toranomon. As the utilisation of the water from these two sources, Kanda and Tamagawa was increased, the pipes for mains were gradually lengthened, so that it seems the water was good and the construction of the water system satisfactory. From this time the use of water from ponds and other such sources was abolished. During the years of Manji (1658) the water course at Yotsuya Okido was turned off and communicated to the localities of Yigura (which is now called the source of the Awoyama watercourse) through Awoyama and Roppongi. During the years of Genroku (1688), the running water in the village of Kameari was drawn to South and North Honjo (which is the present Kameari watercourse) the source of which is the well in the village of Kawarasone, in the Saitamaken, coming to the Kameari through Kinyemon Shinden, &c. The Tamagawa water supply was distributed from Hoya Shinden to Yushima and Asakusa through Sugamo, &c. (which is now called Senkawa water supply), and the work is said to have been carried out under the orders of the Shogun Government by two farmers named Tokubei and Tahei of the village of Senkawa in the Tama district. During the years of Kanbun (1661), the Tamagawa water supply was distributed to the localities of Mita and Shiba from the village of Kitasawa (this is at present called Mita water supply) which was done, under the orders of the Shogun Government, by Nakamura Hachiyemon and Isono Sukeroku. But owing to the great cost of maintenance and other expenses, these four systems of supply were entirely given up in the 7th year of Kioho (1716). In the 9th year of Anyei (1780), the Sengawa water supply was again put on to Shitaya and Asakusa, but it was again abolished in the 6th year of Temmei (1786). Now there remain only two waterworks, Kanda and Tamagawa, which have since been re-established, and the people have only these two services to depend on.*

CHAPTER II.

The Installation of the Tamagawa Water Supply, and its Sources.

The source of the Tamagawa water supply is Midzuhoshi in the village of Kamikane in the province of Kai, whence it flows eastward to the village of Tambayama together with the water running from various valleys. This course is called Kurokawa, Ichinosegawa or Tambagama, and flows again to the eastward of the village of Tomeura in the province of Musashi, and is afterwards called Tamagawa.

In the village of Ogawa, the water joins the river called Akikawa, and thence it flows to Tokio Bay through several villages, districts, &c., the total length of the route being about 38 Japanese *ris* (95 English miles), of which 5 *ris* 25 *ken* (about 12¼ miles), is within the jurisdiction of the Tokio-Fu authorities. In the first year of Showo, the Shogun Tokugawa gave an order to the Machibugio or town governor

* (1) At a meeting of the inhabitants of the Azabu district held on the 4th month of the 13th year of Meiji (April, 1880), it was resolved that the Tamagawa watercourse should be carried to Akasaka, Azaba, &c., from Yotsuya Okido, and an application to that effect was forwarded to the authority of Tokio Fu. The permission was granted in the same month, and the work was begun in the 9th month, and was finished in the 12th month of the 14th year of Meiji (Dec. 1881). The pipes were laid along the same route as the old Awoyamo watercourse.

(2) In the 3rd month of the 13th year of Meiji (March, 1880), Iwasaki Yataro and other three persons formed a water supply company, and made an application for the reconstruction of the Senkawa water supply, which was granted in August of the same year. The work began in October, and it is still in progress.

of that time, Kamiwo Buzennokami, to construct the water supply in the city of Tokio (then called Yedo). Buzennokami thereupon selected two farmers called Sayemon and Seiyemon who used to live along the Tamagawa, and intrusted them with the entire work. After an examination of the existing flowing water in rivers, and taking the gradients and intake for the proposed supply into consideration, they concluded that that of the Tamagawa would be the most suitable. After careful survey both of levels as well as the quantity of water, they formed a plan to construct a reservoir at the village of Hamura, and thence to supply water to Tokio through an open conduit or canal to Yotsuya-Okido. The work was begun on the 4th month of the 2nd year Showo (1653), and was finished in the 11th month of the same year. The total length is 10 Japanese *ris* 1842 *ken* (about 27½ miles). With reference to this work it is said that it was done by Yasumatsu Shinyemon who was then a district officer, and was at the same time a follower of Matsudaira Idzu. A large dam was built at the reservoir at Hamura.

Afterwards a dam of 48 *ken* (96 yards) and a framework filled with rubble stone called Benkei, of 20 *ken* (40 yards) in length, and also two locks were constructed, with over-flow between them, and thus the quantity of supply was regulated.

This gave very satisfactory results. As the breadth of the Tamagawa conduit was found to be too narrow it was widened to 3 *ken* in the 5th month of the 10th year of Kanbun (1670), and on both sides embankments were made upon which trees were planted and Fujii Zenzaimon and other gentlemen were appointed as inspectors. The present breadth of the water which runs about 10 *chôs* (1,200 yards, from the reservoir at Hamura is 7½ *ken* (15 yards) and thence it is 4 *ken* (8 yards) down to the village Sunagawa, and from that point its average breadth is 3 *ken* (6 yards) to Yotsuya Okido. The width of the embankments on both sides of the conduit is about 3 *ken* (6 yards). The foregoing is a short sketch of the establishment of the Tamagawa water supply. Between Hamura and Yotsuya, there are 34 branches where the water is distributed for the purpose of drinking, irrigation, mills, &c. However, after the recent great reformation, some are joined to one branch, while some get their supply from other streams, and thus there are only 23 branches left now.

Finally, an order to construct a watercourse to Toranomon was given, and the work was commenced by laying pipes in some cases, and in others the water was simply led through an open canal, and conveyed thus to Toranomon.

At Yotsuya, where the supply branches off, a cock and overflow pipe were placed, and the supply regulated. The surplus water flowing from the overflow pipe was conveyed to the sea at Shiba through Sengawa, Shibuya, Akabane, &c. In the 4th month of the third year of Showo (1654), when this work was finished, the Government gave the contractor a reward consisting of a sum of money equivalent in value to 200 *koku* (1,050 bushels) of rice, and allowed him to assume the surname of Tamagawa, from the success of his conduit and reservoir, and moreover intrusted him for life with the control of the water supply. After three years another 200 *koku* (1,050 bushels) of rice was given to him as remuneration. But afterwards, owing to misconduct, he was dismissed from his post, and a successor appointed. After some period the main was divided into many sub-mains running in various directions, viz., (1) to supply water to Nagatacho, Hirakawacho and Urakasumigaseki; (2) to the castle where the water is utilized for a waterfall and fountain; (3) to the house of one of the Daimio called Fukui, now the Government Printing Office (Insatsu Kiyoku) through one of the gates of the castle called Hanzo Mon; and (4) into another gate of the castle called Toranomon through Akasaka. From the Toranomon the water was distributed into various directions, viz., one supply to Nishinokubo, Atagoshita, Zojioji (a temple), Shiba, Kanasugi, and finally discharged into the sea: another running in a South-east direction, supplying Soto Sakurada, Tsukiji, Kiobashi, Hatchobori, &c., and finally discharging into the Sumida river at Yeitai bridge.

CHAPTER III.

The Establishment of the Kanda Water Supply and its Sources.

The source of the Kanda water supply is a large pond called Yinokashira, situated between the villages Kichi-joji and Mure in the district Tama in Musashi. This water was first lead to Kanda, hence the name. There are seven springs in the

pond, and they give out a large quantity of pure water. Shogun Togugawa Hidetada visited this place and praised it much. The water from the pond flows down to Hongo-Mura, where a small stream from the pond Jenpu-Kuji empties into it, and thence to Sekiguchi, Koishi-Kawa running together with a branch of the Tama water from the villages Tsuno-hadzu and Kashiwagi and with the water from the pond Mioshoji in the village Kami-Yikusa.

In the course from the source to Sekiguchi the Kanda water is branched off at twenty-seven places for the purpose of irrigation.

At Sekiguchi the water course branches off into mains; one that runs to the right is called Yedogawa and the other to the left is called Shirahori (open conduit) and flows through Koishi-Kawa, Kanda and Yanagibashi into the river Sumida. The latter course is what the name of the Kanda water supply is applied to.

A dam is constructed at Sekiguchi whence water is distributed to the mains. The date of its establishment is not known with certainty, but it would have been in about the year Showo (1650).

The length of water course from its source Yinokashira to Sekiguchi is 5 *ri* 26 *cho* and 15 *ken* (about 14 miles). The water is led from Sekiguchi by open canal through Kobinata and Mito Yashiki, now the Imperial Arsenal, to Moto-machi, Hongo, whence pipes are laid underground to supply water to those parts of the city called Ogawa-machi, Uchi-kanda, Yanagiwara, Riogoku, Hamacho, Oukawabata Yeitai-bashi, and the westward; Shitotsu-bashi, Outemaye, Tatsu-nokuchi Dōri (northward) the outside of Kandabashi gate and Kajibashi gate; Bikunibashi, Kiobashi (north of the bridge), Honzaimokucho, the vicinity of Yedobashi and the north of Yeitai bridge.

CHAPTER IV.

Distribution of Water in Mains.

The way in which this is accomplished is in the first place by making an excavation for pipes which are in connection with the open conduit, from the reservoirs which are constructed at such places where change of direction and gradients occur along the course, or where the water is required to be branched off. There are many kinds of reservoirs, namely:—those placed underground and called *Umemasu* (underground tank); those above ground called *Takamasu* (high tank), or *Demasu* (projecting tank), or *Midzumimasu* (inspecting tank), so called from its indicating level of water in the main. Tanks which project from the surface of the ground, whether long or short, all receive the generic name of *Takamasu*.

Demasu are those tanks which are so placed that their top surface is on the level of the ground, and are edged with stones which are called *Ishibuchi* (stone borders). With regard to construction, there is not much difference between *Midzumimasu* and other reservoirs, the only difference being that the cover can readily be opened or shut, to allow the increase or decrease of water to be seen in the tanks, which is in the same level as the water in the main.

At places where water is required to be branched off, tanks or reservoirs are constructed to which sub-mains can be connected. At places where water is to be raised or lowered, rising or falling tanks are constructed as the case may be, and thus the water is made to fulfil either purpose. Where water has to cross a river or stream, sometimes a pipe is laid at the bottom with two tanks, one at each end, and thus it can flow to the other side on the syphon system. Sometimes the water is carried to the other side by means of aqueducts which are generally placed along bridges and are called *Watashidoi* or *Kakedoi*. The pipes made of stone and laid underground are called *Mannendoi*. The above-mentioned tanks and pipes are used according to the gradient or level of the ground, the pressure of water, and whether the water is to be branched off or otherwise.

CHAPTER V.

The Expense required for the Construction of Two Waterwork Conduits at Tamagawa and Kanda.

The government grant to Messrs. Soyemon and Seiyemon for the expense of constructing the Tamagawa conduit was 6000 *rios* (about £1200 at that time). But this sum was exhausted long before the work reached the village of Takaido,

and an application was made to the government for an additional sum which they refused to grant. But the government at the same time informed them, that there would be a grant made if the work were completed satisfactorily at their own expense, and advised them to proceed. In accordance with this recommendation they contributed the sum of 3000 *rios* for the purpose which amount is said to be the cost of completing the two conduits. However, the period when the work was completed to Toranomon, and the time when the sub-mains from Toranomon to various parts of the city were laid, as also the cost are entirely unknown as there are no written records on the subject.

It is said that the work of the Kanda conduit was done by the government, but as there are no written accounts, it is not certain if it was really so, and the expense of its construction is also unknown.

CHAPTER VI.

Account of the Payments for Salaries and Wages to the officials connected with the Water Supply.

A quantity of rice equivalent to a sum of money at the price of the day was paid from the government to officials in charge of the water supply, but their travelling expenses and their wages for surveillance as well as the expenses incidental to the office were paid out from the current earnings of the company. After the Revolution of 1866 the salaries and the travelling expenses of officers in charge, and the wages of the watchmen and labourers as well as the necessary office expenses were all paid from the government. But since the 6th year of Meiji (1872), the wages of the watchmen, &c., were made to be paid from the water rates, and since the 9th year of Meiji (1875), those of the district surveyors and coolies, have also been paid from water rates, as well as the salaries of the temporary *employés*. This was done probably owing to the insufficiency of the government income at that time.

CHAPTER VII.

History of the Management of the Water Supply.

Since the construction of the water works at Kanda and Tamagawa up to the 5th year of Meiwa (1768), the water mains in Yedo were in charge of the *Machibugio* or city governor, and the sources of the main were under the control of the *Daikan* or provincial governor. But in the 5th years of Meiwa, both were intrusted to the *Fushinkata* or surveyors. In the year of Bunkiu (1861), the duties were intrusted to the *Sakujibugio* (superintendent of the building). At the time of the Revolution, that is in the 4th year of Keiwo (1867), the whole administration was transferred to the municipal authority at Tokio, but in the 2nd month of the 2nd year of Meiji (Feb. 1868) the administration of the water supply was re-transferred to the Public Works Bureau of the Finance Department, with the exception of the control of labourers and the construction of new reservoirs. At the end of the year these also were handed over to the above named Bureau. In the 5th month of the 3rd year of Meiji (May, 1869), the supply was put under the control of the Bureau of Civil Engineers in Mimbusho (an executive department). In the 4th year of Meiji (1870) as this Bureau was amalgamated with the Department of Public Works, the business relating to water supply was also transferred to the latter. In November of the same year the water supply was handed over for convenience to the Finance Department. Since this same year it has been in the hands of the Engineering Bureau of Tokio-Fu.

CHAPTER VIII.

The Mains of the Two Water Conduits Kanda and Tamagawa.

There has been no change or improvements in the construction of pipes for Kanda and Tamagawa conduits since their establishment, a period of over 200 years, except that the number of branch mains have been increased year after year, the total length of pipes constructed up to the time of the Revolution being 76,729 *ken* (about 87 miles) of which 40,276 *ken* or 45½ miles belonged to the Tamagawa conduit, and 36,453 *ken* or 41½ miles to the Kanda conduit. The total

length of pipes laid after the time of the Revolution is 4,314 *ken* or about 5 miles, of which 3,881 *ken* or 4½ miles belong to Tamagawa, and 432½ *ken* or about ½ mile to Kanda. The total length of the pipes laid (exclusive of those for house services) is 81,043 *ken*, or about 92 miles. The number of wells made for the distribution of water from these two supplies is 6,493, of which 2,524 wells are supplied from Tamagawa and 3,989 from Kanda. Besides the number of tubes, there are many branches made between Hamura and Yotsuya-Okido for distributing the water for irrigation and drinking purposes. A *résumé* of the pipes laid before the Revolution would be as follows :—

THE TAMAGAWA WATER MAIN.

Nature of the Conduits.	Length of Pipe in Ken.	Number of High Tanks.	Number of Tanks with Stone Borders.	Number of Underground Tanks.
Stone Pipes	1848·00			
Wood Pipes	35594·44	56	154	829
Iriko	78·00			
Open Aqueducts.....	208·00			

THE KANDA WATER MAIN.

Nature of the Conduits.	Length of Pipe in Ken.	Number of High Tanks.	Number of Tanks with Stone Borders.	Number of Underground Tanks.
Open Aqueducts.....	722·34			
Stone Pipes	2555·30	16	57	879
Iriko	859·30			
Wood Pipes	32316·13			

CHAPTER IX.

ANALYSIS OF WATER IN THE MAINS FROM THE KANDA AND TAMAGAWA.

Tokio is supplied with water from three different sources. The city proper—that is the part bounded by the Sumidagawa and the Bay of Yeddo on the one side, and on the other by a line standing from Kanasugi-bashi, Shiba to Toranomon and passing thence by the outer moat of the castle and the Kandagawa as far as Riogoku-bashi—is supplied by means of pipes which convey water from two sources, and, except in the elevated districts of Bancho and Surudai, surface water is not used. The rest of Tokio, outside the castle walls, and the districts of Honjo and Fukagawa on the other side of the river, use only surface water. The two kinds of water which are distributed to the different parts of the city are derived from the Tamagawa, and from the Kanda. The point at which the water is taken off from the Tamagawa is about 12 *ri* from Tokio, and water is conveyed to the city in an open canal to Yotsuya, where it enters the city pipe, and discharges at Reiganjima. It supplies the whole of the city south of a line drawn from Yotsuya to Hitotsu-bashi, from this to Wadagura-go-mon, passing thence to Kaji-bashi, and on to O-hashi, following the canal north of Hachobori and Reiganjima.

The source of the Kanda water is about 4 *ri* from the Dai Gaku (Tokio University), and consists of three ponds, but a branch canal of the Tamagawa joins it on the way, so that the two waters are mixed in about equal quantities. It enters the city pipe at Sekiguchi, Koishikawa, and discharges at Riogoku-bashi and Kio-bashi. The remainder of the city, with the exception of Bancho and Surugadai, which use surface water, are supplied with Kanda water.*

The Tamagawa Water (Table I.):—The water from Kojimachi may be considered as the material which is used to supply the wants of a large town. Although it is not absolutely pure, the amount of impurity is so small that it proves previous contact with sewage to have been of very slight extent. And the quality of the waters taken from Toranomon, Kanasugi-bashi (Shiba), and Hachobori resemble it in purity, though the former appears to have been slightly contaminated by some local impurity. The two remaining specimens of this water, however, taken from Tsukiji and Reiganjima contain very considerable quantities of impurity, as is indicated by the large amount of chlorine and free ammonia which they contain. The chlorine is probably derived in part from the water of the bay, but that the increase is not wholly due to this circumstance, is shown by the presence of a large amount of ammonia, which can only have been derived from the decomposition of animal matter. In these low-lying districts where the flow of the water is smaller, there must be a much greater tendency for impurities to percolate through the joints of the pipes than in the higher districts, and in this way the greater amount of impurity may be accounted for. But, the pipes being made of wood, in time become saturated with water and a process of diffusion must occur between the water in the pipe and the impure liquids outside. This diffusion will take place throughout the whole system of pipes, but will be much more marked in those districts towards the end of the supply where the flow is more sluggish.

Kanda Water (Table II.):—The specimens taken at different points of the district supplied from this source show a progressive increase of impurity as the distance from the source is greater. At Sekiguchi (Koishikawa) where it first enters the city pipes, it equals in purity the water derived from the Tamagawa, and if its purity could be preserved, no exception could be taken to the water supplied to the city of Tokio.

But the results of analyses show that this is not the case. It is very interesting to observe how nearly regular the increase is. Starting from Koishikawa, the three first samples are very pure, containing small amounts only of solid matter, chlorine, ammonia and oxydized nitrogen, whilst those samples taken from the centre of the populous district supplied with this water present much larger quantities of each of these constituents. The two last specimens taken from near the end of the supply at Kakigara-cho and Yonezawa-cho (Riogoku-bashi), have evidently been very largely contaminated with organic matter, the amount of albuminoid ammonia being very large, whilst the evidence of previous pollution is also very strong. This comparison of these various waters, therefore, confirms the remarks made in connection with the Tamagawa water. It is quite evident that the use of wooden pipes is not sufficient to preserve the quality of the water, and as such pipes are liable to admit organic contamination into the water supply, there is no reason to suppose that they will exert any especial exclusive action on the disease germs which may surround them. Imagine a few isolated cases of any zymotic disease breaking out in any part of this thickly inhabited district, and consider how impossible it is to prevent some of the excreta of such patients finding its way into the soil and so into the water supply, and it will be evident that such germs will spread with characteristic rapidity through the whole of the district subsequently supplied by such water. In such a case the water, indeed, acts as a carrier of the disease, and its use is even worse than that of the water from surface wells, which at most supply only a few houses. The natural inference to be drawn from these analyses is that, the water being good to start with, proper means should be taken to preserve its purity by the adoption of some system which will prevent the introduction of impurity from the soil, that is, by replacing the wooden pipes by others made of some impervious material.

* The analyser is indebted to Mr. Matsumoto, C.E. Engineer to the Tokio Fu, for the above particulars, and also for information respecting the best points from which to take samples of the water of the two supplies.

Table I.—Tamagawa Water, Tokio.

Sample of Water taken from	Parts of 1,000,000 of Water.							
	Solids.	Chlorine.	Ammonia.		Oxidized Nitrogen.	Total Mineral Nitrogen.	Previous Sewage Contamination.	Calcium Salts.
			Free.	Albuminoids.				
Koji-machi 5 chome	60·5	6·5	·028	·036	·888	·596	5960	44
Kotohira-cho, (Tora-nomon), No. 1	87·5	11·5	·106	·043	1·185	·971	9710	51
Hamamatsu – cho (Shiba), No. 1 .	69·5	7·0	·049	·069	·954	·683	6830	39
Odawara-cho (Tsukidji), 3 chome, No. 7	160·5	23·0	2·476	·065	·959	3·115	31150	57
Matsuyacho, (Hon Hachobori), 3 chome, No. 2 .	106·5	10·5	·068	·047	·567	·315	3150	49
Shio-cho (Reiganjima), No. 4 . .	261·5	43·5	1·079	·070	1·911	2·68	26800	82·5

Table II.—Kanda Water, Tokio.

Sample of Water taken from	Parts of 1,000,000 of Water.							
	Solids.	Chlorine.	Ammonia.		Oxidized Nitrogen.	Total Mineral Nitrogen.	Previous Sewage Contamination.	Calcium Salts.
			Free.	Albuminoids.				
Sekiguchi (Koishi-Kawa), open canal	98	7·9	·055	·121	·81	·545	5450	48
Sarugaku-cho, 3 chome, No. 2 .	110	9·5	·071	·129	1·07	·821	8210	51
Hon-cho, 3 chome, No. 2	87	15·5	·205	·121	·98	·865	8650	49
Tori Abura-cho, No. 11 · . .	144·5	25·5	·422	·159	1·44	1·542	15420	77
Minami Temma-cho (Kio-bashi), 3 chome, No. 5 .	203·5	30·5	·551	·185	1·09	1·321	13210	83·5
Koami-cho, 3 chome, No. 26 .	250·	33·5	·505	·187	1·72	1·905	19050	88·5
Kakigara-cho, 3 chome, No. 10 .	240·5	42·0	1·630	1·650	1·65	2·96	29600	78
Yonezawa-cho, Riogoku-bashi), 3 chome, No. 5 .	287·5	49·5	4·29	·245	1·17	5·14	51400	90

(8.) Models of Wooden Water Pipes, used in the City of Tokio, on a scale of about $\frac{1}{20}$th.

(*A*) A Model of Rectangular Main.

(*B*) A Model of Rectangular Sub-main.

(*C*) A Model of Connecting Pieces.

(*D*) A Model of Bored Circular Pipe.

(9.) A Specimen of Wooden Suction-Pump, largely used for shallow wells.

A is the cylinder, *B* the piston, *C* the handle, *D* the leading pipe of bamboo, and *F* the trough into which the water flows.

Class XXII.

House Drains, etc.

(10.) Specimens of Drain Pipes, made by Toyogumi.

(*B*) Red Drain Pipes, made of the clay from clay-beds in the villages of Kariya and Nishio in Mikawa. The size is $4\frac{1}{2}$ in. wide by $3\frac{1}{2}$ in. deep.

(*C*) White Rectangular Drain Pipe, made with the same clay as *B*, size $4\frac{1}{2}$ in. by $3\frac{1}{2}$ in.

(*B*) Glazed Earthenware Drain Pipe.

(*C*) A similar Pipe.

(*D*) 5 in. Semi-Circular Drain Pipe.

(*E*) 6 in. Semi-Circular Drain Pipe.

(*F*) A Specimen of $9\frac{1}{2}$ in. Triangular Drain Pipe. It may be used for drains or ridging.

The above pipes are all made of clay from the Kariya and Nishio beds.

(*G*) A Specimen of $9\frac{1}{2}$ in. Triangular Drain Pipe, same as *F*, glazed.

(11.) A Short Description of Disposal and Utilization of Sewage and Refuse.

Night Soil.—A certain person has the removal of night soil from every house, and such matter is removed from closets at certain fixed periods, the matter being applied to the fields as manure.

Dirty Water.—The dirty water from kitchens or from baths is led into drains distant from the dwelling-house, or is made to flow into a cesspool in the corner of the garden (in some places). It is used as a manure for crops.

Refuse of Rice.—It is given to dogs, fowls, sparrows, etc., or is thrown into dirt heaps.

Refuse of Fish.—This is given to cats or dogs, or thrown into the cesspool in the corner of the garden, wherein it is kept as manure for trees and shrubs. All the rest is thrown into dirt heaps.

Refuse of Vegetables, etc.—What the cattle can eat is given to them as fodder, and the rest is thrown upon dirt heaps.

Smoke.—Windows on the roof of houses are open, and from them the smoke, especially of the kitchen, issues; and what remains in the house is used for dyeing bamboos to preserve them from decay.

Ashes.—These are used for cleaning oily metallic or earthen plates; also as lye for washing and cleaning undershirts, etc., and the rest is either used as manure or thrown upon dirt heaps.

Waste Paper.—Waste paper is sold to those engaged in the business, and is resold to paper makers, who pulp it up for Sukigayeshi (paper made of waste paper).

Rags.—This kind of refuse is sold to indigo makers, who extract the colouring matter by boiling the rags, and make indigo of it; the residue is thrown upon dirt heaps, and also used for paper manufacture of European system.

Broken Articles.—Certain kinds of broken pieces of pottery are, after grinding up, used as material for manufacturing other pottery mixed with fresh material. Also pieces of broken glass-ware are used for making glass again, by melting them. As to lacquered or gold-lacquered articles, the gold is scraped off, and then what is left is burned or removed to dirt heaps.

Dust.—The dust that collects daily in every dwelling-house is frequently removed to dirt heaps. A certain number of persons are selected for cleaning the dirt heaps, and remove the dirt there accumulated, such dirt being frequently used as manure.

Cattle Dung.—Straw, etc., polluted by cattle is removed and made into manure.

*** The above is a description of the disposal and utilization of house refuse, with respect to ordinary dwellings, but remarks concerning factories and farms are omitted.

Class XXIII.

Urinals and Closets.

(12) Model of "Detached Closet," with separate Urinal, made on a scale of $\frac{1}{25}$ of the actual size.

(*a*) is the entrance, (*b*) the urinal, (*c*) the door between the urinal and closet proper and (*d*) the closet.

(13.) Asagawo (earthenware urinal).

(14.) Omaru (portable urinal, made of wood lacquered, for children's use and invalids).

Class XXIV.

Stoves, Dinner Services, Kitcheners, etc.

(15) Stone Stove.

It is made of stone in a square form, in front of which blue coloured figures are burnt in, and in the lower part there is a fixed iron door which can be opened and shut freely; in the inside there is an iron net spread, and in the back part a hole leading to the flue. A wooden board is placed underneath.

(16.) Model of Nabe (iron pan).

This is made by pouring melted iron into the pan mould. It is then polished, and its shape is like an orange cut in half. It has a handle and a wooden cover, and is used for boiling vegetables and other food.

(17.) Model of Kama (iron kettle).

This is made in the same way as the pan just referred to; it is of a long round shape, having a ring in the middle, called Tsuba, which is attached for hanging it up or over a furnace. The cover should be of thick wood. This vessel is used for boiling rice.

(18.) Model of Kitchen Stove.

This stove is constructed on a stand made of Keyaki wood (Zelkowa Keaki) by pieces of tiles mixed with mud, to which Arakida or clay and sand together with some fibrous material of binding is plastered. Then the surfaces are coated with finish (a kind of cement) and polished. There is a hole on the top to rest kettle and pan on, and an opening in the front to supply fuel. This model is a double stove, and the joint is made of copper excavated like a boiler. Water is always filled in the cavity and warmed while the fire is kept in the stove. The water thus warmed is generally used for washing purposes.

(19.) Model of Utsunomiya's Improved Kitchen Stove.

This is constructed by laying bricks as walls, and has three holes on the top. In the first hole or furnace iron grates are fitted, and it has an opening with hinged door to supply fuel. In the lower part of the furnace there is a small hole to admit the air to pass. The other two furnaces have also openings in front, and small holes on their sides. Thus the three furnaces permit the current of air to go through, and have valves to prevent its passage when desired. All the furnaces are used for cooking, when fire is kept in the first one. To the side of the third furnace a chimney is fixed. This improvement was made by Utsuno-miya Samuro Esq.

(20.) Sakura-dzumi (best charcoal).

This is made of Kunogi wood (Quercus serrata) by drying and burning it in a furnace. The process is that the Kunogi wood is burnt by smoke or soft fire of pine leaves by closing the door of the furnace as soon as the leaves have raised flames. This is mostly manufactured at Sakura in the province of Shimo-osa.

(21.) Katadzumi (hard charcoal).

The kind of charcoal made of the Kunogi tree is the best, and that made of the Nara tree the worst; the method of burning is same in both cases.

(22.) Dogama (soft charcoal).

Several woods are used for making Dogama, and the method of burning is the same as Katadzumi. Dogama is the inferior kind of charcoal; it is useful, however, as it readily ignites.

(23) Tadon (powdered charcoal ball).

This is manufactured by pulverizing charcoal in a mortar, and afterwards sifting and kneading by mixing paste made of Tsunomata (seaweed) with it. It is worked round by the hands. This is used as fuel by the lower class of people.

(24–25.) Kuwairo (pocket warmer, with its ashes).

This is made of copper, is concave in shape, and has a number of small holes on the surface to admit the air; the lid is attached by a hinge. Kwairobai (ashes used only for Kwairo), covered with paper, is, after igniting it, put into the Kuwaiso, which is then placed in the pocket. It is principally used by old or sick people to keep them warm.

Full Dinner Services, 10 *Sets* (26–53).

Dinner Services of First and Second Tables.

These are the eating services used for ceremonial banquets; the table, with its appurtenances, offered to a guest at the beginning of the repast, is called the first table, and that offered next is called the second table. The chief articles belonging to these tables are:—

(26.) First Table or Zen (wooden tables).

This is square in form, having rims all around; its feet are called Icho-ashi; it is lacquered black, red or dark green, etc. Those here exhibited are black. Usually black coloured ones are used in the banquets of birthday and alike, and red ones for funerals, ancestral festivals, etc.

(27.) Hashi (wood chopsticks).

Made of Adar wood, planed and well polished, about 10 inches in length. They are thrown away when used once.

(28.) Mimigawarake pottery, like a deep saucer in shape).

Used for stand of chopsticks.

(29.) Meshiwan (wooden bowl lacquered, for boiled rice).

This is made of Buna tree (Fagus sylvatica), in a round form with cover, and lacquered in the same colour as Zen. All the articles (Nos. 30, 34, 35, 36, 37, 40, 42, 43, & 44) are lacquered in the same colour. Meshiwan is placed upon the Zen on the left.

(30.) SHIRUWAN (wooden bowl for soup).

This is used for miso soup, and placed on the right.

(31.) TSUBO (wooden pot for fish and vegetables).

This is placed upon the other side of Zen on the left.

(32.) NAMASU-ZARA (plate for pickled fish).

This is an earthen ware, and placed on the right of Tsubo.

(33.) KONOMONO-ZARA (small plate for salted vegetables)

This is placed in the centre of Zen.

SECOND TABLE OR ZEN (34–39).

(34.) SECOND ZEN.

This is the same as first table, but smaller in size.

(35.) SHIRUWAN (wooden bowl for soup).

This is the same as that in the first zen, but used for clear soup, made of soy, and placed in the middle part of zen, on the side nearest to guest.

(36.) HIRA (flat wooden bowl for fish and vegetables).

This is placed on the left in the other side.

(37.) TSUBO.

This is the same as that in the first zen, but used for a kind of stewed fish.

(38.) CHOKU (deep plate for dressed vegetables).

This is placed on the outside of Zen.

(39.) YAKIMONO-ZARA (plate for grilled or roasted fish in whole).

Placed on the outside.

(40.) MESHIBITSU (wood tub lacquered, for boiled rice).

This is put on a stand and used by the waiter to serve boiled rice to the guests.

(41.) MESHIBITSU-DAI (wooden stand lacquered, for the above).

(42.) SHAKUSHI (wooden ladle, lacquered).

This is used for removing boiled rice from Meshibitsu into a Meshiwan.

(43.) YUTŌ (wooden jar for boiled water, lacquered).

This is used for Kogeyu, that is made by roasting a small quantity of boiled rice, rolled with a little salt, and pouring hot water. Tea is replaced by Kogeyu in all the grand festivals except on the occasions of funeral and a like. It gives a very admirable flavour.

(44.) KAYOIBON (small wooden tray, lacquered).

(45) NEST SAKE-CUPS.

There are three of these of different sizes; they are round in shape, and are lacquered red, with the figures of pine, bamboo and plum trees on them in gold.

(46.) SAKE-CUP STAND.

This is a round wooden article with three feet; the ground is dark blue lacquer on which are certain figures lacquered in gold.

(47.) CHOSHI (SAKE-HOLDER).

It is made of wood in the shape of a date; it is lacquered red inside and black outside.

(48.) SUIMONO-ZEN (wooden table, lacquered).

This is the same as the first Zen, but smaller than even the second one, and without foot. After the first and second tables are finished, this table is brought before the guests for serving soup made of very light materials. Its colour is generally not black, and sometimes gold lacquered.

(49.) HASHI (chopsticks).

Smaller than those of No. 27.

(50.) SUIMONO-WAN (lacquered wooden bowl for soup.)

This is round in shape, with a cover to it. Representations of several kinds of shells are lacquered on it in gold.

(51.) SUDZURI-BUTA (large wooden tray).

This is a flat shape, with gold lacquered representation of bamboo blown by the wind, on a dark blue ground also lacquered; it is used for putting Kuchitori composed of fish, sweets, etc., on.

(52.) FISH-BOWL.

This is used for serving fish at banquets.

(53.) KWASHI-BON (lacquered wooden tray for cakes).

This is a small round tray for serving cakes to each guest separately after dinner.

Riori-Kwaiseki (ordinary dinner services, 10 sets—54–77).

(54.) ZEN (lacquered wooden tray).

This is the same as the Zen in full dinner services, but has no foot. Its inside is black lacquered and polished, and the outside of its rim is called Wakasa-nuri.

(55.) HASHI (chopsticks).

(56.) SUIMONO-WAN (lacquered wooden bowl for soup).

This is also round in shape and has a cover, and figures of birds floating on waves are lacquered on in gold.

(57–62.) KUCHITORI-ZARA, HACHIMORI-ZARA, SASHIMI-ZARA, SHIRU-CHOKU, UMANI-ZARA, AND SUNOMONO-ZARA (plates and saucers for fish, vegetables, or sauce).

They are earthen wares.

(63.) CHAWAN (porcelain bowl for boiled rice).

(64.) SAKE-CUP (earthen ware).

(65.) SAKE-CUP STAND (earthen ware).

(66.) HAISEN (sake-cup cleaner).

This is a porcelain bowl without cover, and about three times larger than the Chawan. When used for washing Sake-cup to clean it before a guest or host passes it to another, it is filled with water.

(67.) KAN-DOKURI (porcelain Sake-bottle with stand).

This is used for warming and serving Sake. Sake is warmed by putting the bottle into hot water boiled in a kettle.

MESHI-ZEN (part of ordinary dinner services).

(68.) MESHI-ZEN (table for Han or Meshi, boiled rice).

This is a wooden square tray with rim in all sides, and has no foot. It is lacquered in dark-brown colour.

(69.) MESHIWAN (lacquered wooden bowl for boiled rice).

It has cover, and lacquered in the same colour as the above.

(70.) SHIRUWAN (lacquered wood bowl for soup).

Same as the above.

(71.) MUKŌ-ZARA (porcelain plate for fish).

(72.) HIRA (flat lacquered wooden bowl for fish and vegetables).

Same as No. 69.

(73.) KONOMONO-BACHI (porcelain dish for salted vegetables).

This is used for serving salted vegetables to all the guests.

(74.) YAKIMONO-ZARA (porcelain plate for roasted fish).

(75.) MESHIBITSU (lacquered wooden tub for holding boiled rice) WITH STAND AND LADLE.

(76.) KAYOYI-BON (small lacquered wooden tray).

(77.) EARTHENWARE TEA-POT.

There are two kinds of tea-pot porcelain and pottery. Porcelain is made by baking the powder of white earth, while pottery is of earth in its natural state. After it is baked once, certain figures are painted with several colours and is then rebaked; the handle is fastened on with earth.

(78.) YASHOKU-ZEN (dinner table).

This is square in shape, is 1·2 *shaku* in dimensions, and has two feet; the following articles belong to this table, namely:—Yashoku-wan and Shiru-wan (dinner bowls). These are round, lacquered black outside and red inside.

(79.) JIKIRO (wooden case).

This is round in shape, gold lacquered, and is used for carrying cakes in.

(80.) KWASHI-WAN (soup bowl).

It is round in shape, lacquered black all over, with gold lacquered figures of the Kiri (*Paullownia Imperialis*) on it.

(81.) KIZARA (wooden plates).

These are round, and have on them gold lacquered figures of the Kiri on a black lacquered ground; they also are used for cakes, or grilled or stewed fish, &c.

(82) KOZARA (small saucer for dressed or salted vegetables).

(83.) HIRA-ZARA (flat plate for fish).

(84.) JIUBAKO (a nest of lunch boxes).

They are square, and lacquered on the outside in such a manner as to show the grain of the wood and red inside. They are used for holding food.

(85.) JIUBAKO (a nest of lunch boxes).

They are same as above in shape and for their use, but have the figure of pine and vine in gold lacquer.

(86.) JIU-BANO (a nest of lunch boxes).

They are porcelain wares and have the figures of plants in blue colour.

Table-ware in Foreign Style (87–91).

(87.) Pot.

This is of thin porcelain, and of a round shape, and has on it the representation of a duck in snowy weather; the handle is of whalebones, white and black, plaited together. It is used for making coffee or tea in.

(87a.) Sugar Bowl.

The material, shape and ornamentation are the same as those of that just described. In the upper part there are two handles or knobs shaped like bamboo roots.

(87b.) Milk-pot.

The material is the same as that of the above, but the shape is that of a long cylinder, and has a lip to the lower part; it has also a handle or knob.

(87c.) A Pair of Cups with Saucer.

These cups are also made of the same material as the above, and have a handle on one side. They are used for coffee or tea.

(88.) Pot.

This is of thin porcelain ware, with coloured designs of flowers and of grasses on a peach-colour ground.

(88a.) Sugar-bowl, Milk-pot and Cups.

They are made of the same material and in the same way as the above, and are of the same shape and figure.

(89.) Coffee-pot.

These are of porcelain ware and shaped like dates, and have on them pictures of gold colour on a red ground; the knobs or handles are in the shape of bamboo roots.

(89a.) Milk Jug.

This is of the same material as the above, with designs on it to match.

(89b.) Sugar Basin.

This is also similar with respect to material, shape and handle.

(89c.) A Dozen of Coffee-cups.

The material and designs are the same as those just described.

(89d.) Shitazara (coffee-cup stand)

The material of this is also similar, and its shape is round.

(90.) A Dozen of Cake Plates.

They are made of the same material, and have on them coloured designs of flowers and birds, and are edged with gold lines.

(91.) A Dozen of Fruit Plates.

The material is the same as that of the above, but their shape is that of lotus leaves, and the designs on them are coloured flowers and birds. Their use is indicated by their name.

(92.) A Pair of Kuwashiki (cake holder).

This is also made of thin porcelain and is of a short cylindrical shape, with cover, and stands on three feet. It is ornamented with gold figures, and on the cover there is a representation of a Japanese lady painted in ink colour.

(93.) Paper Napkin.

This is used for wiping the mouth as also the hands, if made dirty, after diet

(94.) Saraskiki (paper to put plates on).

This paper, crimped in imitation of crape, is only used for putting plates on.

(95-98.) Hocho (kitchen knife).

The manufacture of this article will be readily understood by Englishmen and need not be enlarged on here. There are four kinds exhibited, namely:—Deba (thick blade), Kodeba (small thick blade), Usuba (thin blade), and Sashimi (long narrow).

Class XXVI.

Lighting Apparatus.

(99.) Andon (Night Light) with Saucer, Plate, &c.

There are several forms of Andon, and the one just exhibited is in the shape of a melon, and is the best kind. It is made by erecting two supports on a round stand, both of which are lacquered red, to which a round cover made of framework pasted with paper is attached. Across the middle part of the supports a piece of wood board is placed to put the oil plate on; in this plate the oil can is put. This is one of the most necessary appliances in a Japanese household.

(100.) Andon (night light, round shape).

The framework is made of wood, lacquered red; the outer cover is so constructed as to go round the inner one, which is attached to the under stand, both being covered with paper; two metallic bridges are attached to the inside cover, on which a candle is put.

(102.) Bajo (lantern used on horse-back).

This is made of long and slender slips of bamboo, made into a round shape by joining them with small threads, and such slips of bamboo are called *Higo;* to the upper and lower extremities wooden rings are attached; the whole being covered with *Nishino-uchi* (thick paper), with certain figures or signs drawn. It is then covered with seed oil, and has a handle made of lacquered wood in which a smaller stick of whalebone is kept in order to lengthen the handle, which kind of handle is called *Furidashi.* Another kind of handle is made of leather, by means of which the lantern is fastened to the waist of the equestrian.

(103.) Yumihari (lantern with bow-shaped bamboo handle).

This is made in the same way as (102), but a bamboo handle is attached, with some figure or design on it. This lantern is used when walking at night.

(104.) Odawara (folding lantern).

This is made in the same way, but its form is that of a long cylinder, having two wooden frames at the ends, and an iron handle attached to the upper portion with a string fastened, by means of which it is carried.

(105.) Gifu (ornamental lantern made at Gifu).

This is made in a similar way, but its form is like an urn; the paper used for covering is Tengujo (thin paper), and certain coloured designs of flowers, birds, landscapes, &c., are drawn on it. The upper and lower frames are made of wood lacquered, and brass studs are inserted on certain parts in the frames. This lantern is used in summer time.

(106.) HODZUKIJOCHIN (red lanterns).

Many of these are lighted together for decorative purposes on the night of any celebration.

(107.) KAKEANDON (hanging night light).

This is a semi-circular wooden frame-work, lacquered red, and covered with *mino* (paper). Used for lighting by hanging it on poles.

(108.) KIRIKODORO (wooden framework lantern).

It is made of square or hexagonal shape, and covered with a thin kind of paper, such as *Tengujo*, to which long and narrow pieces of paper are fastened for ornamentation. This lantern is lighted on summer nights, as it is a very cool illuminant.

(109.) TSURIDORO (hanging lantern).

It is made of square shape, covered with silk, on which water-colour pictures are painted. This is lighted under the roof outside the windows on summer nights.

(110.) NIWADORO (garden lantern).

It is made of wood, with skilful workmanship, and covered with paper from the inside, and is hung on trees at night for illuminations.

(111.) TESHOKU (candlestick).

This is made of cast brass; the shape is like a Hinoshi, or smoothing iron; it has two short and one long feet.

(113.) CANDLESTICKS.

Made of wood and lacquered black.

(114.) CANDLESTICKS.

Made of the mulberry wood, the length being 1½ *shaku*. The stand is carved work of chrysanthemum flowers. This is made for holding foreign candles.

(115.) BONBORI (hand lantern).

This is a round frame-work of wood, covered with paper with board at the bottom, and a wooden handle attached; there is a short metallic stick inside whereon to place the candle; this lantern is principally used within the house to look for anything after darkness has set in.

(116.) KIRO (candles of crude wax).

The method of making.—Melted wax is laid over the wicks, which are wound around a split of bamboo. They are finished by cutting and trimming the extremities, and taking away the bamboo slip.

(117.) SARASHIRŌ (candles of bleached wax).

(118.) YERO (painted candles).

(119). SUKIYARO (candles for tea-rooms).

(120.) ITO-SHIN (candles with cotton wicks).

(121.) UNBLEACHED BRASSICA OIL.

This oil is expressed by machinery from Brassica seed. It cannot be used with food, but for lighting purposes only.

(122.) BLEACHED BRASSICA OIL.

This is used for lighting purposes.

(123–125.) Fish Oil.

This is expressed from several kinds of fishes; it gives off a very disagreeable smell. This oil is used for lighting purposes only by people of the lower classes.

Here the following description of oil manufactures is as well added, though some of them do not belong properly to this class.

There are many kinds of oil extracted from plants specially cultivated in various localities in Japan; however, the one most common in use, is that expressed from the seed of the *Brassica chinensis*, called *Taneabura* (seed oil) or *Tomoshi abura* (lamp oil), and mostly used for illuminating purposes. The best kinds are called *Ageabura*, *Shirashibori abura*, *Taihaku-abura* and *Naoshi-abura*. Some of them are used as condiments, others as pomade. But of late foreign lamps have come into common use, and kerosene oil produced in several localities of our country is used in the place of vegetable oil.

The next oil used with food is the oil expressed from the seed of *Sesamum indicum;* it is also used as a material for making plaster (*emplastrum*), or it may be used as pomade.

The oil expressed from the nuts of the *Camellia Japonica* of Idza, is one of the best kinds of such oils. There are many ways of using it, but it is especially applied to the lubricating of fine machinery; it is also used as a pomade. This oil neither putrifies nor dries when exposed for however long a period to the sun's rays; moreover, it undergoes no change of colour when mixed with mineral acids.

The oil from the *Arachis hypogæa*, has been recently coming more into use, as it is used with food instead of *Aribetsu* oil, and it may be used for making soap.

The oil from the *Gossypium indicum* is used chiefly for illuminating purposes, but in severely cold weather it easily congeals unless mixed with common brassica oil.

The extract from the seed of the *Perilla ocymoides* cannot be used with food, but is useful for varnishing Japanese umbrellas, *kappa* (rain coats) and for mixing paints.

The oil from the seed of the *Elaeococa cordata* is called *Kiriyu*, *Doku-no-abura* or *Omi-abura*. It has a bitter taste, and is very poisonous, and is used for illumination. If it is exposed to the sun's rays it dries easily, therefore, it is used for varnishing the paper of which Japanese umbrellas are made, or as a material for manufacturing printing ink; it is efficacious in driving away noxious insects from the fields.

Sardine oil, whale oil, and shark oil are the most common kinds of fish oil; all of them are used for illumination instead of vegetable oil, for driving away injurious insects, and more recently for manufacturing fish-oil candles.

(126.) Hiuchibako (tinder-box).

This is a wooden oblong box of one *shaku* long, and about three *sun* broad, having a boundary line of wood within the box, the smaller part, that is the part where tinder is kept in, covered with a lid; the other, larger, always contains flint and a steel.

Class XXVII.

Firemen's Procession.

(127) Drawings of Firemen's Procession in former and present system.

Class XXVIII.

Materials for Sanitary House Construction.

(128.) Specimens of Bricks.

Made at the factory of Toyogumi, in Nagoya, in the province of Owari.
(*a*) Kiln-burnt brick; (*b*) Fire-brick, and (*c*) Polished brick.

(129.) A Specimen of Tile.

Made at the factory of Toyogumi, in Owari.

(130.) Specimens of Partition Walls, cut out from the real ones.

These partitions are specially constructed for ventilating purposes, and are not air-tight, but readily allow air to pass through.

(131.) Model of an Ordinary Common Wall.

Showing "under-rendering" (Arauchi-uranuri), made on a scale of about one-twentieth of the actual size.

After the framework of houses is made, such as posts, horizontal ties, sills, &c. sticks of small bamboo or reeds are fastened horizontally to the frame with nails, and vertically at an interval of about 5 or 6½ inches, then a number of similar sticks are fastened to them with straw ropes of rough finish in the manner shown on the back of the model. The spaces between the two sticks are generally about an inch or so apart. This lattice work of bamboo or sticks forming the interior of the wall is called Komai. Then a mixture of clay and sand, together with small pieces of straw or some other fibrous material of a binding nature, is plastered to it, generally by a trowel, and left to dry. This first surface is rough, so some more layers are generally added. The outside coat is called *Nakanuri*, or middle rendering.

(*b*) Model of a common partition wall, showing the surfaces of several renderings with different finish. The framework, or skeleton of the wall, is made in the same way. Thus, *A* is the surface of the middle rendering, and *B* the outer surface rendering, or finish.

Different colours are given to the finished surfaces, according to taste and the design, by painting with metallic compounds. This sort of partition-wall is very common in Japanese houses.

Being porous to some extent, it is not necessary in some places to have any special ventilators in the rooms. In considering the question that the different kinds of this wall allow of the passage of air through them, attention should be given to the result of some experiments made at the Imperial Japanese Sanitary Laboratory.

(*c*) Model of a framework wall, showing the surfaces of several renderings with different finish. The framework is made with vertical posts, horizontal ties, diagonals, &c., to which boards of about an inch thick are stuck with nails, leaving a space of little over half an inch between the two boards; over this plaster is laid on in the ordinary manner. The advantages of this kind of wall are that, being hollow, there is a layer of air inside between the two surfaces, which makes the wall itself a very good non-conductor of both heat and cold. Sometimes holes are made through the horizontal partition-boards in the inside of the wall, so that the air can pass through. If an outlet is made under the roof it will serve the purpose of ventilation at the same time.

(*d*) A collection of different kinds of lath and plaster work commonly used in Japan.

E, *F*, *G*, and *H* are the surfaces of different renderings, viz., *E*, *Morokashi-suna*, F, *Nedsumi-Osaka*, G, *Cha-Negeshi*, and H, *Kuro-Migaki*, or black polish.

(*e*) Samples or collections of wall renderings of different colours. The different kinds are marked on each sample, so that they can be easily identified.

(131A.) Ventilation through Walls.

Thirty years ago we had not any bricks in Japan, therefore they were never used to build walls. Instead of them, we took another substance which is not so small in size as a brick. The surface of the wall was built up straight and no bond was used. The ventilation of such a structure must therefore be different from a brick building. Six different kinds of such walls have been made up by bricklayers as specimens, the formation of these walls being not different to common ones only smaller.

Formation of Wall.

The wall is made up of bamboo ribs which are connected to each other with straw ropes and coated with mud and straw cut into pieces 1½ in. thick, when dry it is again coated smoothly with fine mud and then painted with coloured mud to improve its appearance.

RESULT OF AN EXPERIMENT.

Air was allowed to pass for an hour through an opening of 1 square inch in a wall 5 cubic inch thick, the temperature being 12°C, and barometric pressure 762. The results were as follows:—

Names of Walls.	Cubic Metres of Air.
Tessha	1·96
Hinode	3·70
Doro-Otsu	1·95
Asagi Abosh	1·04
Cha-Otsu	2·03
Asagi-Nashime	6·38

The same are calculated to the volumes at temperature 0°C, and a barometric pressure of 760, water-pressure being 10,334 ctm. (100th of the atmospheric pressure).

Names of Walls.	Cubic Metres of Air.
Tessha	4·52
Hinode	7·21
Doro-Otsu	3·22
Asagi-yeboshi	2·08
Chiya-Otsu	4·04
Asagi-nashime	1·15

(132.) MODEL OF A BRICK WALL SHOWING THE BOND SYSTEM EMPLOYED.

The surface (A) is faced with plaster only. If a whiter surface is required it is white-washed.

(133.) SAMPLES OF SHINGLES USED FOR ROOFING.

(134.) SAMPLES OF SPRUCE-BARK USED FOR ROOFING.

(135.) SAMPLES OF CEDAR BARK USED FOR ROOFING AND OTHER PURPOSES.

CLASS XXIX.

Materials for Sanitary House Decoration.

(136.) HARIGAMI (wall papers).

This is used for covering walls or sliding doors, &c., for house decoration. Some of them are washable.

(137.) WALL CLOTH.

The use of this is precisely the same as above, but not washable.

(137A.) COLLECTION OF COLOURING AND DYE STUFFS.

In Japan, although certain denominations of pigments and dye stuffs used for colouring and dyeing cloths, furniture, toys, food, drinks, &c., differ in each locality, yet their constituents are the same, as they are prepared mostly from plants. Consequently, there was once the difficulty that every kind of colouring matter did not produce as fine effects as might be, but owing to the improvement in trade, foreign dyes such as aniline have come into use. However, as the poisonous or non-poisonous effects of colouring matters have not yet been ascertained, there has arisen a difficulty about using them for colouring toys for children, eatables and drinkables. For this reason the Sanitary Bureau of the Japanese Government has specially collected several kinds of colouring matters used in the country, and after having made a thorough analysis of them, the poisonous or non-poisonous properties have been notified to the public in a brief account in Circulars Nos. 20 and 37 of

the Sanitary Bureau. In the meantime the Bureau promulgated an order regulating the use of pigments and dyes.

There have been many kinds of pigments and dye stuffs in use in Japan for many years past, and a list of some of the principal ones is hereunto annexed: they are classified into organic and inorganic, and sub-divided into two classes A and B, for the convenience of visitors; those that have no poisonous effects are placed in class A, and those having such effects or whose effects are unknown, are placed in class B.

TABLE I.

Inorganic Pigments.—Class A.

Names.	Synonyms.	Origin and Composition.	Colours.
Iwa-gunjo	Ruri-gunjo Haku-sei. Eng. Ultra-marine	Sodium sulphide, Aluminium silicate	Blue
Haku-do	.. ..	Aluminium silicate, a little iron and magnesia, traces of lime	White
Ji-no-ko	.. ..	Much iron with silicic acid, a little aluminium sulphate, magnesia, lime	White
Oh-do	San-oh-do	Iron oxide with magnesia, lime, chlorine, sulphuric acid and silicic acid	Yolk of eggs, yellow
Tai-sha-seki	Nishi, Aka-tsuchi. Eng. Hæmatite.	Iron oxide with clay	Dark red
Tama-dzumi	.. ..	Carbon, aluminium silicate, iron, magnesia	Black
Nedzumi-dama	.. ..	Carbon with much iron oxide, a little lime, alumina	Grey
Mu-mei-i	Eng. Limonite	Iron oxide with much silicate	Reddish-brown
Un-mo	Kira Kirara. Eng. mica	Silicic acid, aluminium sulphate of iron oxide, a little magnesia	Silver-white
Kedzuri-dzumi	.. ..	Scraped Indian ink, composition same as tama-dzumi	Black
Go-fun	Ko-fun	Prepared from clam and oyster shells, contains lime and magnesium carbonate	White
Tetsu-tan	Bengara. Eng. Colcothar	Chiefly iron oxide with calcium sulphate or silicate	Red
Sabi-iro-ko	.. ..	Aluminium silicate with iron oxide, a little lime and magnesia	Reddish-brown
Yu-yen	.. ..	Carbon	Black
Shu-do	Ni-tsuchi. Tan-do	Iron oxide	Red
Shō-yen	Matsu-hokori	Carbon	Black
Shaku-seki-shi	Tshi-wata	Aluminium silicate iron oxide, manganese magnesia, lime, traces of fluorine	Reddish-brown
Susu-dama	.. ..	Iron oxide, silicate, sand with a little calcium sulphate and very little carbon	Black

TABLE II.

INORGANIC PIGMENTS.—CLASS B.

Names.	Synonyms.	Origin and Composition.	Colours.
Iwa-roku-sho	Iwa-roku. Eng. Malachit	Basic copper carbonate and copper arsenite with ferrous oxide, trace of alumina	Green
Iwa shiro-roku-sho	Iwa-shiro	Basic copper carbonate, with much silicate	Green
Ita-roku-sho		Arsenious acid and basic copper acetate with alumina, chlorine, sulphate and silicate	Green
Riyoku-ban	Roh-ha. Ao-miyo-ban. Eng. copperas.	Iron sulphate	For producing various colours by mixing other dye stuffs
Hana-roku-sho	Orand-roku-sho. Eng. Schweinfurter'-green	Copper arseniate, with copper acetate or silicate	Green
Hen-sei	Twa-konjo. Eng. lazuli	Copper carbonate with iron	Blue
Toh-do	Yeri-oshiroi. Eng. white lead	Basic lead carbonate and lead carbonate	White
Toh-ai	.. ..	Prussian blue, mixed with white matters	Blue
Toh-usu-ai	.. ..	Prussian blue with much alumina	
Tan-pan	.. ..	Copper sulphate	Used as colours and mordants
Tsubu-roku-sho	.. ..	Starch and a little basic copper acetate mixed with arsenic, chlorine, magnesia and silicate	Green
Neri-roku-sho	.. ..	Starch with a little copper acetate, traces of lime, magnesia and alumina	Green
Yaki-kom-job	Eng. cobalt ultramarine	Aluminium silicate with cobalt, arsenic, iron, lime, magnesia, phosphoric acid	Blue
Kona-roku-sho	.. ..	Starch mixed with basic copper acetate, arsenic, iron, chloride, silicate or much alumina	Green
Koshirai-seki-woh	.. ..	Orpiment mixed with a great quantity of silicate	Faint yellow
Ga-shō-sei	Gosu. Eng. asbolite	Manganese, cobalt, nickel, iron, &c.	Used as colours of porcelain
Koh-tan	Wōh-tan, Tan-fun, Shu-fun	Lead oxide and peroxide	Yellowish-red
Yen-woh	.. ..	.. ..	Yellow

TABLE II.—Class B—*continued.*

Name.	Synonyms.	Origin and Composition.	Colours.
Yen-paku	Oshiroi. Haku-fun. Yen-fun	Basic lead carbonate with starch	White
Yen-tan	Eng. Massicot	Lead oxide	Yellow
Ki-roku-sho	.. ..	Starch with a little copper acetate	Green
Kin-fun	Magai-kin-fun	Usually brass filings	Golden colour
Gin-fun	Magai-gin-fun	Usually tin filings	Silver white
Kin-nashi-ji-ko	.. ..	Usually brass leaf	Golden colour
Gin-nashi-ji-ko	.. ..	Usually tin foil	Silver white
Miyo-ban	Doh-sa. Haku-han. Eng. alum	Potassium aluminium sulphate	Used as mordants
Shi-woh	Ki-wo. Tshi-shi-woh Oh-woh. Eng. orpiment	Arsenic, trisulphide	Yellow
Shu	Gin-shu. Eng. cinnabar	Mercury sulphide	Red
Shu-drumi	Eng. red ink	Same as cinnabar	
Shin-chu-fun	Eng. brass powder	Copper and zinc with traces of iron, lead, lime, &c.	Golden colour
Shin-chu-haku	Eng. brass foil	.. ..	Golden colour
Doh-fun	Eng. copper powder	.. ..	Golden colour
Doh-haku	Eng. copper foil	———	
Se-shitsu-ko	.. ..	Orpiment with much silicate and a little prussian blue or with much silicate and indigo	Dark green
Sudzu-haku	Eng. tin foil	.. ..	Silver colour
Sui-gin-roh	Rei-sha. Koku-sha	Black mercury sulphide	

TABLE III.

ORGANIC COLOURING MATTERS.—CLASS A.

Name.	Synonyms.	Origin and Composition.	Colours.
Hu-nagashi-ran-roh	Ita-ran-roh	"Ai" indigo extracted from rags. (92. 6 % ash)	Blue
Hana-da-gami	Boh-shi-gami. Ai-gami	Paper steeped in the juice of flowers of *Commelyna communis* L. (Tsuyu-kusa)	Blue
Mai-kuwai	Hamanasu	Flowers of *Rosa rugosa*	Red
Koh-kuwa	Beni-bana. Eng. safflower.	Flowers of *Carthamus tinctorus* L.	Source of "Beni"
Beni	Kata-beni. Tsuya-beni. Saiku-beni. Ki-beni. Shiru-beni. Eng. carthamine	Made of flowers of *Carthamus tinctorus* L.	Red
Warabi-ko	.. ..	Starch made of brake fern (*Pteris aquilina*)	Faint brown
Ga-woh	Gama-bana	Pollen of *Typha Japonica*	Yellow
Tama-ran-roh	.. ..	Consists chiefly from "Ai" indigo	Blue
Neri-dzumi	.. ..	Prepared by mixing lye of *Catalpa Kaempferi* (Kisa-sagi) alum and sapan wood infusion to the bark of *Pyrus toringo* (Dzu-mi)	Yellow
Mume-dzu	.. ..	Sour and saline liquids obtained by steeping Mumé fruit	
Ukon	Eng. turmeric root	Root of *Curcuma longa* L.	Yellow
U-bai	Fusube-mume	Prepared by smoking fruits of *Prunus mume* (Mume)	Black
San-shi-shi	Kuchinashi	Fruit of *Gardenia florida*	Yellow
Kei-shin	.. ..	A residue left after distilling cinnamon water	
Koseniel	Eng. cochineal	.. ..	Carmine red
Ran-joh	.. ..	Indigo manufactured from leaves of *Polygonium tinctorum* (Ai)	Blue
Ran-roh	.. ..	"Ai" indigo mixed with starch	Blue
Oh-baku	Kiwada	Bark of *Evodia glauca*	Beautiful yellow
Kinako	.. ..	Powdered soy beans	Yellowish-white
Hiki-cha	.. ..	Ground tea	Green
Shō-yen-ji	.. ..	A kind of lac obtained from *Erythrina sp.* or cotton steeped in carmine	Red
Dzumi	.. ..	Bark of *Pyrus toringo*	Yellow
Su-woh	Eng. sapan wood	Wood of *Caesalpinia sappan*	Red

TABLE IV.

ORGANIC COLOURING MATTERS.—CLASS B.

Names.	Synonyms.	Origin and Composition.	Colours.
A-kiyo	Nikawa. Eng. gelatine		
Sei-boh	Kariyasu. Someshiba	Stems and leaves of *Calamagrostis hakonensis*	For producing green, brown or black colour
Tan-gara	Kō-hi	Bark of *Rhizophora mangle*	
Shi-kon	Muravaki	Root of *Lithospermum erithrorhizon*	Chiefly used for colouring toys
Yasha	Yashabushi	Strobuli of *Alnus firma*	Used for producing various colours
Yoh-bai-hi	Yamamomo. Shibuki	Bark of *Myrica rubra*	
Go-bai-shi	Fushi. Kifushi. Eng. Japanese galls	Excrescences on *Rhus semialata* (Nurude), caused by the punctures and deposited ova of insects	For producing various colours by mixing with others
Kuwai-kuwa	Yen-ju	Flowers of *Sophora Japonica*	
Sei-kon	Akane. Eng. Munjeet root	Root of *Rubia cordifolia*	Red
Seki-riu-hi	Zakuro-no-kawa	Bark of fruit of pomegranate (*Punica granatum*)	Brown
Toh-woh	Shiwo. Eng. gamboge	Gum resin obtained from *Garcinia Hanburii.*	Yellow
Shitan-fun	.. ..	Powdered sandal wood (*Pterocarpus Santalinus*)	Dark purple

(138.) Model of Ramma (lattice-work door for ventilation).

It is placed on the upper beam in a groove, mostly for the partition of rooms; some are covered with paper and others are not.

(139.) Model of a Ramma (opening for ventilation).

This is a better kind of opening for ventilation than the ordinary lattice-work kind.

(140.) Models of Shoji (framework doors).

Descriptions only are given in some cases, the actual Shoji not being always exhibited. Among the models there is one that has a long thin board at the lower part, the rims of which are lacquered black, and another that has a shorter thin board at the bottom. This is a framework of cedar wood, which is called *Hone* (bone), and is covered with thin paper. Its length is 5 *shaku*, and its breadth 2·8 *shaku*. (This kind of *Shoji* is mostly used in country districts.) This is an appliance fitted all around the house, and through which light can be obtained and also ventilation.

(141.) Model of Fusuma-Shoji (sliding door).

This is also called *Karakami*, the description of which is given in another place. Two kinds of *Fusuma* are exhibited, one is covered with figured paper and the other with a design or inscription.

The method of making is much the same as for Shoji, but paper is pasted on both sides, so that light cannot pass through. This is used as a partition door for bedrooms, on which account it is sometimes called the bedroom Shoji. It is also put between any rooms as a partition. It is called *Karakami*, by reason that it was covered with Chinese paper in old times.

A coarse kind of paper is pasted on the so-called bone before it is finished with a kind of wall paper called *Shitabari* (under paste). It is laid on in many different ways. The one displayed at this Exhibition shows one of the methods adopted, the back part of it is left open in order to allow of its being inspected.

(142.) Yoshishoji (Shoji, made of rush).

The ground of it is made almost like the *Shoji*, but rushes are used in the place of paper, and the frame work is much simpler than that of *Shoji*. This is used in summer time, instead of *Shoji* or *Karakami*, as the cool air passes readily between the rushes.

(143.) Amado (night door).

This is made of framework simpler and stronger than Shoji and covered on one side with cedar wood board fixed by nails. It is fitted all round the house on the outside of Shoji after dark.

Class XXX.

Objects for Internal Decoration and Use in the Dwelling.

(144–145.) Dantsu (cotton carpet).

Made of coarse cotton threads woven into the thickness of a straw mat; coloured figures of flowers being also woven in. This is a production of Sakai, in the province of Idzumi.

(146.) Yuton (oil paper carpet).

Made by pasting several sheets of *Minogami* (paper), and afterwards applying the sap of persimmons. This carpet is only used in summer. It is a cool and agreeable article of furniture in summer.

(147.) Tomushiro (ratan carpet).

The ratan is cut into six parts, and then joined with thread, the two edges being finished by interlacing with ratan. Its use is similar to the above.

(148.) HIHADAMUSHIRO (sitting cushion made of shavings of *Hinoki*, a species of *Thuya obtusa*).

This is made by knitting with silk threads the thin shavings of *Hinoki* taken off with a sharp plane. This is a very light cushion and well fitted for summer use.

(149.) MISU (bamboo screen for palace use).

This is made by knitting fine slips of bamboo with silk threads, the edges being embroidered works of *Donsu* silk fabric for ornamental purposes: two tassels of red silk threads are attached and two ornamental metal hooks are appended for rolling it up and down. This is used to hang in palaces or in front of places where gods are placed.

(150.) TAKESUDARE (bamboo screen).

This is made by tieing up with dyed linen thread pieces of polished bamboo into the size of about 1 *bu*. It is used to ward off the rays of the sun as well as for the purpose of ventilation.

(151.) YOSHISUDARE (reed screen).

This is made by tieing with hemp threads the requisite number of polished reeds, attaching bamboo sticks both to the upper and lower ends. Its use is the same as the screen before described.

(155–159.) HANAGOZA (figured mat).

Made of woven straw. There are many ways of weaving, the use, however, does not differ at all. This mat is used in summer, owing to its coolness.

(160–166.) TATAMI (rush mat), manufactured at Bingo.

This is made of rushes and worked hemp thread into lengths of 6 *shaku* and 3 *shaku* broad. The best mats are produced at Bingo. *Tatami* (mattings to put on floor) are made by joining together the rush mat with long needles. The two longer sides are usually covered with black hemp cloth, which is called *Heri*, or border, or sometimes the mats are not bordered. There are several kinds of *Heri*, *e.g.*, the kind with black patterns on a white ground and called *Koraiberi*, the kind dyed yellow and called *Kakitagberi* (these two kinds being the superior kinds), and the common kind of deep-blue hemp cloth. *Tatami* is a mat laid down in rooms of a house. Besides these there are mats produced at Riukiu, in the Loo-Choo islands, which is made by working up certain kinds of seaweeds with thread, in the same way as above. This lasts longer than the mat produced at Bingo: the material used however is coarser than the former. The use is the same.

(174–175.) ZABUTON (cushion for sitting on, for a person).

This is made of silk or calico, and is only used for sitting on. Those exhibited here are of violet crape and of Kaiki silk.

(176–176A.) HIHADA-ZABUTON.

Material is the same as No. 148, and one of these two kinds is lined with the same stuff.

(177.) YUTON.

Material is the same as No. 146, but its use is only for a person.

(178.) RATTAN-ZABUTON.

Material is the same as No. 147.

(179–182.) HANAGOZA (for a person to sit on).

Material is the same as No. 155.

(184.) JIKUMONO (three sets of hanging pictures).

A picture lined with paper, the edges of the two sides being decorated with gold brocade and satin pasted on the upper and lower sides. A roller and rings for hanging up are attached, and when not in use the pictures are rolled up, in map

fashion. The drawings represent respectively waves, and swallow, grasses and fowls, sparrows and bamboo. They are all in water-colour, and painted by Tsunenobu. These are usually made use of for room decoration.

(185.) JIKUMONO (three sets of hanging pictures)

The drawings represent Koi fish in different views, and painted by Tannu.

(186.) PANEL, an article of household ornamentation.

Made of *cloisonné* enamel on copper, with flowers and birds. The rim is made of *Kurogaki* (black persimmon wood). It is 21·5 *sun* long and 17 *sun* wide.

(187.) A PAIR OF FLOWER VASES.

These are of *cloisonné* enamel on copper, of a light-blue colour; they are of a cylindrical shape and 9½ *sun* high. They have on them representations of birds and flowers, in rich colours. They are used for holding flowers or for the decoration of rooms.

(188.) A PAIR OF FLOWER VASES.

They are made of porcelain; the ground is a deep-blue; on one is the representation of rice plants, and on the other that of wheat plants, the edges of both represent an embroidered bag, and the representation of a dragon fly appears on the inside. They are used to hold flowers.

(189.) FLOWER VASE.

This is made of bamboo, produced in the province of Satsuma. Its diameter is 7 *sun*, and its length 2 *shaku*. The exterior is carved landscape work. The manufacturer of this vase is *Arai Kensai*.

(189A.) FLOWER VASE.

This is of white porcelain ware, made in the form of makkal, that is, both ends are narrower than the middle part. Figures of fabulous birds are introduced, and verses also appear.

(190.) KAZARITSUBO (an ornamental jar).

This is also a *cloisonné* enamel copper of a deep blue colour, with coloured representation of a willow tree and of *Lespedeza;* its height is 1 *shaku*, and it is for house decoration.

(191.) CARD PLATE.

A round plate of the same material as the above, with coloured representations of flowers and birds. The plate has three short feet.

(192.) SHOW PIECE.

This is of iron coloured old porcelain ware made in Bizen, with representations of Daikoku and Hotei (gods of wealth) playing and dancing together. This is an ornamental piece generally placed on the *Tokonoma* (that part of a Japanese house which is a few inches higher than the floor).

(193.) INCENSE BURNER.

The material is old copper, on which the figures of three dragons are cast, and the rims are inlaid with gold.

(194.) CORNER SHELF.

The material is quince wood, and is made into shelves and closets; the rims are open carved woodwork, and the figures on the doors are of pine tree gold lacquered, the fastening being the figure of a grasshopper. This is in imitation of the European style, but the materials are the production of Japan.

(195.) KAKEDANA (hanging shelf).

The material used for the ground work is quince tree wood, the doors being of *Jin-daisugi* (kind of cedar tree), on which the figures of sparrows and *naruko* (a

kind of scarecrow which makes a noise) are carved. The front part of the shelf is lacquer sprinkled with gold dust, and the ceiling is covered with Donsu silk cloth, ornamental rims being attached. The height is 1½ *shaku*, and the breadth 3.8 *shaku*. This piece of furniture also is in imitation of the European style, but the materials used are of Japanese production.

(196.) Tea Shelf.

This is made of a Chinese wood called Shitan. The breadth is 2.3 *shaku*, the right half being lower than the left. The length of the higher part is 1½ *shaku*. The statue of Kwan-on and rocks are carved and inlaid with ivory. It has two shelves. This is a piece of furniture for arranging tea utensils, and was made by one of the tea party called *Kobori Yenshiu*, from which fact this kind of tea shelf is called "*Yenshiu-gonomi.*"

(197.) Tsuitate (screen).

On one side there is a water-colour picture of a crow drawn by Shojo Kiosai, and the other side is covered with a coloured picture of flowers and birds; its rims are made of the *Akagashi* wood (Quercus acuta.) The height is 3 *shaku*, and the breadth 2½ *shaku*. Screens and folding screens were the same things in ancient times, both being used as a protection from wind.

(198.) Tsuitate (screen).

Made of the bamboo used for making arrows. The central part is fitted with carved work in imitation of the barb of an arrow, such *appliqué* work being called raised gold lacquer; these barbs are the models of the barbs used by Gen. *Kusunoki*, or of a certain ancient style. The back is of cedar wood, on which is an old and gold-lacquered copper jar excavated in the province of Yamato. The rims are made of the wood of persimmon. The height is 1·9 *shaku*, and the breadth 2 *shaku*.

(199.) Double Folding Screen of Shitan (a Chinese wood).

The designs of fire-flies and the grass called fire-fly grass are inlaid and lacquered. The lower part is *jindaisugi* (cedar tree) in its natural colour, and as the veins give the appearance of water, the figures of snipe are carved into it; the back surface is lacquered in copper colour, and the figures of Howo (fabulous birds) and *Paulownia Imperialis* are drawn, such figures being called Todaiji. The height of this screen is 2½ *shaku*, and the breadth when opened 3 shaku.

(200.) Double Folding Screen.

The size, &c., are very similar to the above, but the inlaid and lacquered works represent the figures of cherry trees and crabs. In the lower part collection of shells are put, the veins of the ground being treated as the bottom of the sea.

(201.) Model of Six-Folding Screen.

The processes of making the screen are:—(1) *Honeshitaji* (making of the frame-work); (2) *Minobari* (covering with paper); (3) *Mino-oshibari* (covering with another kind of paper; (4) *Fukurobari* (pasting the edges with paper); (5) *Uwabari* (the last covering with paper). After these processes the gold leaves are pasted round each face, and in the centre the peony flowers are drawn, which finishes the work. The ornamental metallic pieces are nailed on afterwards.

(202.) Model of Six-Folding Screen.

Pasted with bamboo screen in the centre; but the work round each surface is made in the same way as the above. This is partly for ventilation purposes.

(203.) Folding Screen.

This is made in the same way as above; two of these are usually joined together with paper so as to fold, but sometimes as many as four, six or eight screens. Figures are generally drawn on one side. This is merely a development of the common screen, and its use is the same.

(203A.) FUROSAKI SCREEN.

This is a double folding screen, and is used for placing in front of the furnace in a tea room.

(204.) FOLDING RUSH SCEEEN.

This is the same as common double folding screen, but its surface is entirely covered with rush instead of paper.

(205.) PAPER WINDOW CURTAIN.

This is made of imitation crape made of paper.

(206.) PAPER TABLE CLOTH.

(207.) RIOSHIBAKO (paper case).

This is a rectangular-shaped box with a cover to it of old black lacquer, sprinkled with gold dust, and with the figures representing the view of distant hills; it is 5 *sun* deep and 20 *sun* long, and is used to hold papers.

(208.) PAPERS FOR WRITING AND OTHER PURPOSES.

(209) SUDZURIBAKO (writing box).

This is also a rectangular box with a cover to it. It is of black lacquer, sprinkled with gold dust, with the same figures on as (207), and is 2 *sun* deep by 10 *sun* long. It is used for holding an inkstone and necessaries.

(210) SUDZURIBAKO (writing companions).

The ground is made of mulberry wood, and the lid is of black persimmon tree on which the figures of horticultural objects and small animals are carved in ivory; the back is of lacquer, sprinkled with gold dust. The box contains inkstone, writing brushes, Japanese ink, &c., and is chiefly used as a writing apparatus.

(211.) KAZARI-BAKO (ornamental hand box).

The outside surface is gold lacquer with figures of grasses and flowers, and the inside is black lacquer sprinkled with gold dust. Four small boxes are within the door, which is usually kept locked. The size is 5·5 *sun* high, 6 *sun* broad, and 3·5 *sun* deep.

This is kept mostly near the desk and used as a jewel box.

(212.) CIGARETTE CASE.

(213.) HIROBUTA (large wooden tray, lacquered).

The material is the wood of *Retinispora obtusa*, lacquered in imitation copper colour, and is inlaid with silver; it is 1½ *shaku* long and 1 *shaku* wide, with a handle attached. This is used for carrying tea or coffee services.

(214.) HIROBUTA (gold lacquered.)

The material, use, &c., are the same as above, the only difference being that it is *gold* lacquered.

(215.) WRITING BRUSH STAND.

This is made of bamboo, 7 *sun* in length; figures are carved on the circumference, which is made of plum tree, chrysanthemum, bamboo, &c.

(215A.) DESK.

This is made of shitan (a Chinese wood); the size is 3½ *shaku* long by 1·9 *shaku* broad and 1 *shaku* deep; the back is covered with cotton cloth. The principal use of the desk is to rest books on and for writing; however, it is also used as an ornamental piece of furniture and several ornamental writing instruments are usually arranged on it.

(216.) BUNDAI (small wooden table).

A table of about 15 *sun* broad and about 10 *sun* long, with four feet. The chrysanthemum flowers are lacquered on in gold. This is used for putting books on. This was made about 700 years ago.

(217.) KENDAI (book stand).

A wooden table gold lacquered with figures of a peacock and peony flowers. A small board is placed obliquely upon the one foot fixed to the under stand; this is used to put the book on when reading.

(218.) GOBAN (draught-board).

The board made of Kaya tree (Torreya nucifera) is square in form and is 15 *sun* long and 14 *sun* broad, with four feet; the figures of grasses are lacquered in gold on the four sides: nineteen lines crossing each other are drawn in black. This is used for playing on by two persons, by putting white and black round stone pieces alternately on the points where the lines cross with each other.

(218A.) GOREN (cases for holding these pieces).

These are round wooden boxes, with figures of grass lacquered in gold. They are used for keeping separately the white and black pieces just referred to. The number of these pieces is 361 in all. When playing, they are placed on alternate squares and the contest decided by their movements.

(219.) SHOGIBAN (chess-board).

This board is also made of Kaya tree, in a square form, and a little smaller than Goban; the figures in gold lacquer are the same as those of Goban. Eight lines crossing each other are drawn in black. The game is played by arranging the Koma or chessmen and moving them in a certain manner.

(219A.) KOMABAKO (box for chessmen).

This is a small box with lid, and the same gold-lacquered figures are used to hold the chessmen when not in use. The number of the pieces is limited to forty of different kinds.

(220.) SUGOROKU (Japanese draught-board with dice).

This is made of quince tree, gold lacquered on its sides; the cross lines being of carved ivory work. The game is played by means of dice and cards, both of which are made of ivory.

(221.) KUSUDAMA (Incense Ball).

Various kinds of artificial flowers are tied together into the shape of a ball one *shaku* in diameter, and from it ornamental crape is suspended. The incense is placed in the buds of artificial flowers for the purpose of perfuming rooms.

(222–238.) INCENSE AND PERFUME.

There are many kinds of incense, perfume, and josssticks, and they are made in various shapes; they are kept either in a wooden or in a tin case or even a paper wrapper. The varieties of incense are *Senshu*, *Kikukwa*, *Kurobo*, *Jutai*, *Sansui*, *Banshun*, *Ouchi*, *Keiun*, *Rokushu*, *Kinkei*, *Ranka*, *etc.* Incense is much in vogue in Japan by all persons who claim the possession of a refined taste, and is largely used for perfuming the air of apartments.

(239.) NAGAHIBACHI (oblong fire-box).

This is made of black persimmon wood, is 1·6 *shaku* long and 1 *shaku* broad, and is lined with copper. This apparatus is used to keep fire in for warming the hands, and also apartments. It is sometimes called hand stove.

(239A.) A pair of HIBASHI or tongs.

(240.) MARUHIBACHI (round fire-box).

This is made of the wood of the mulberry tree and is lined with copper; the diameter is 1·1 *shaku*, and three feet are attached to the bottom. It is an imitation of one formerly possessed by Nin-naji in Kioto; a pair of tongs belonging to it are in *cloisonné* enamel. The use is the same as that of the *Nagahibachi*.

(241.) TABAKOBON (smoking service).

This is also made of mulberry wood, and figures of waves are carved; a handle of different material is attached. Within is a fire bowl of porcelain and an ash tray of bamboo. This is a most useful utensil for smokers.

(242.) TABAKOBON of saddle form.

This is in most respects the same as No. 241, but has no handle; the fire bowl is earthenware and the ash tray is of bamboo.

(243.) Model of TABAKOBON (fire-box containing smoking utensils).

This is a long square box with wooden bottom, and lacquered; two holes are made in order to handle it. It may be used as a small fire-box, but is especially useful for smoking purposes.

(244.) Model of a TABAKOBON for a gentleman's use.

This is made of wood of the natural colour; it is rectangular in shape, and has drawers, a fire box, and ash holder with catches, and a pipe with racks to hold it in. There is no fixed limit as to its size.

(246.) KIUSU (teapot).

It is made of porcelain, having a knob in the centre of the lid, and on the exterior flowers and birds are painted.

(247.) TEA CUP.

The material and the figures on it are the same as those of a Kiusu. Its name explains the use.

(248.) YUSAMASHI (vessel for cooling hot water).

It is made of porcelain in the form of a lotus leaf, and has on it a coloured figure of a crab.

(249.) MIDZUKOBOSHI (a vessel for pouring out water.)

It is made of bronze, in the shape of a small bag, and has a concave lid, in the middle of which there is an open carved work of cherry blossom, through which the water is poured.

(250) CHATAKU (tea cup stand).

This is made of tin, in the shape of a tea-leaf, and is made black by smoke.

(251.) CHATSUBO (tea caddy).

This is made of tin, having two covers on the outside and one on the inside. When tea is kept in this jar it does not lose its aroma.

(252.) CHAGO (tea measurer).

A small carved and polished bamboo vessel, used for measuring the tea which is put into the pot.

(253.) CHABON (tea tray).

It is made of *Shitan* (a chinese wood), is square in shape and has some engraved figures on it. Too well known to need detailed description.

(254.) KWASHIKI (cake box).

A round porcelain bowl and cover with pictures painted on it. It is used for holding all sorts of dry confectionery.

(255.) MUSHIKWASHIZARA (confectionery plate).

This is also made of porcelain with certain figures on it, and is only used for confectionery.

(256.) BINKAKE.

This is a tripod of porcelain having a small mouth in front. It is used for standing an iron tea kettle on, to boil water.

(257.) GOTOKU (iron tripod).

This is an iron ring on three feet projecting upward; half of it is buried in the ashes, and on the top of the feet the iron tea kettle is placed.

(258.) HIBASHI (tongs).

These are small iron rods with handles of cedar wood; and are used for handling fire.

(259.) TETSUBIN (iron tea-kettle).

An iron vessel of *Rikiugata* (a certain peculiar shape) having on it a devil's mask; the lid is copper of a red colour, with a knob in the centre; the handle is of iron inlaid with silver.

(260.) MIDZUTSUGI (water jar).

Made of brass in the form of a Japanese drum, with the figure of a drum on one and a long projecting lip; the handle is composed of two small metallic bars.

(261.) TRAY.

This is cut out from a gourd, a handle is attached and a board affixed to the bottom, which is lacquered and a water colour picture is then drawn. The diameter is 1½ *shaku*, and the height 7 *sun*. This is used for putting cakes in or for arranging tea or coffee services.

A Set of "Powdered" Tea Services. (262–314.)

(262.) FURO (furnace) with iron boiler.

Furo is made of bronze in the shape which is said to have been introduced to Japan from the Corean islands. It is therefore called *Chosen gata-buro*. This is an apparatus used for boiling water, in summer.

(263.) MAYEGAWARAKE (earthenware plate to put in front of the mouth of a Furo).

This earthenware is made of the earth in the street of Imado, Tokio; its shape is in imitation of a well-known old-fashioned ware. It is placed in front of the Furo to keep off the heat.

(264.) MARUKO-ITA (board on which the Furo is placed).

This is a board of *Hinoki* (*Thuya obtusa*) lacquered. There are two forms of this, one round and the other square.

(265.) ASHES.

Ashes produced by burning Sakura charcoal, *i.e.*, the special kind of charcoal made at Sakura, in the province of Shimosa, and then colouring them with tea. Such are the only ashes used in the Furo.

(266.) MIDZUSASHI (water jar) with lid.

A porcelain vessel manufactured in the province of Idzumi, and designated Minato ware. Its use is to hold water to fill the boiler.

(267.) EARTHENWARE TEA CUP.

There are many kinds of tea cups used for a tea party. This is called Raku ware.

(268.) CHAKIN (tea cloth).

Linen cloth manufactured in Nara. New cloth is used every time the host invites a tea-party.

(269.) CHASEN (tea stirrer).

This is made of bamboo produced at Takayama, in the province of Idzumi. Its form resembles a kind of brush. Its use is to mix the powdered tea with the hot water. The shapes are various.

(270.) CHASHAKU (tea spoon).

This is made of ivory. In ancient times the material used was ivory only, but afterwards, owing to the scarcity of this substance, bamboo was often used instead; and now the spoons made of old bamboo are esteemed before ivory.

(271.) THIN POWDERED TEA CADDY.

The lacquered wooden case for holding and preserving the powdered tea. Its shape is that of the date fruit.

(272.) FUKUSA (silk napkin).

The material is made from silk called Shioze.

(273.) TSUKIGATABISHAKU (crescent-shaped ladle).

This is made of bamboo with a handle attached. It is used for dipping up boiling water from the boiler.

(274.) FUTAOKI (rest for lid of iron kettle).

This is made of bronze, and represents the figure of dolls. It was introduced from China in former times.

(275.) KOBOSHI (earthenware slop basin).

This is of Yanagwa ware, manufactured in the province of Chikugo.

(276.) SANJIUDANA (nest of shelves).

These are made of the Kiri (*Paullownia imperialis*), produced in the Northern province of Japan. It is used for arranging the services necessary for making tea.

(277.) THICK POWDERED TEA CUP.

The cup is of Idzumo ware. The wrapper is an imitation Chinese fabric woven in Japan.

(278.) THICK POWDERED TEA CADDY.

Of Seto ware, manufactured in the province of Owari. This is used to hold thick powdered tea or Koi-cha.

(279.) CHARCOAL BASKET.

This is the representation of a turned mask, which was used in certain plays performed during the period of Kanyei, by a priest in Kioto named Takimotobo. From this fact the vessel is called a mask basket.

(280.) KIRIDZUMI (shaped charcoal).

A production of the village Ishikawa, in the province of Kanagawa. The shape shown in the exhibit is the common one.

(281.) YEDADZUMI (branch charcoal).

A production of the same place. This kind burns more readily than the Kiridzumi.

(282.) HIBASHI (tongs).

A pair of iron sticks made in the form of Tatami needles. This is the form most generally used for all tea-making purposes in the tea ceremony of Senke. In winter tongs with handles are used.

(283.) KWAN (small rings).

The material is of iron inlaid with silver; when removing the boiler, these rings are attached to its handles. They are usually kept in the charcoal basket.

(284.) KAMASHIKI (iron kettle rest).

The material is ratan; it is placed on the matting on which the kettle is put when it is taken away from the furnace.

(285.) INCENSE CASE.

This is a lacquer ware used for incense materials, and is usually kept in the charcoal basket.

(286.) HAIBOROKU (earthenware dish).

This is an apparatus to put ashes in and transport them to the room. This is used in summer to level the ashes in the furnace before charcoal is put in.

(287.) ASHES (for earthenware dish).

They are called *Urokobai* or *Fukusabai*, i.e., ashes clarified by washing with water.

(288.) HAISAJI (ash ladle).

It is made of copper and coloured dark by smoking, and is used for removing ashes from the Haiboroku.

(289.) MITSUBA-BOKI (feather duster).

This is made of the feathers of an eagle, which inhabits the Corea.

(290.) WATER JAR.

A copper vessel used for carrying water to fill *Midzu-sashi or Kama*.

(291.) ZABOKI (hand broom).

This is made of feathers of an owl from Hokkaido (northern provinces of Japan). It is used for removing dust from the tea room.

(292.) SHUKIN (linen cloth).

This is the same as Chakin (tea cloth). It is always put upon the lid of the *Yakan* water pot, and is used to wipe up any water that may be spilt in pouring from one vessel to another.

(293.) Ro (fire-place in the floor).

This is a fireplace for winter, or an iron vessel sunk into the floor of tea room, and its wooden rim or Robuchi is in the same level as the Tatami or mat. Sometimes those of masonry work are used, in case of most formal ceremony.

(294.) ROBUCHI (fire-place rim).

It is made of cedar wood and fitted to the fire-place. It is lacquered in cases where the size of the room is above 4½ *joo* (or 9 square feet), and is not lacquered below this size.

(295.) GOTOKU (iron tripod).

This is a tripod of cast-iron; the shape is known as *Satsumayagata*. It is used to place the boiler on, in the fire-place.

(296.) ASHES.

Same as the ashes before described, but used for the fire-place on the floor.

(297.) OIBUCHI (cover for fire-place rim).

This is made of the wood of *Paullownia imperialis*, and is usually placed inside of the rim, when there is no guest.

(297A.) ROBUTA (lid for fire-place).

This is basket work of bamboo, with ratan. It is used when the fireplace is not in use or is worn out.

(298.) JOTAN (frame-work cover patched with paper).

The material is the wood of *Paullownia imperialis* covered with paper. It is usually put on the fire-place as the cover in order to keep out the dust.

(299.) CHARCOAL BASKET.

The material is the old bamboo which was once used as the material for the dwellings of countrymen. This is a representation of the basket brought as a present to his pupil by Rikiu, on the way home from his journey to the mineral spring in Arima; it was made by him during the stay there. From this circumstance it is called Arima-miyage (the present from Arima).

(300–301.) KIRIDZUMI AND YEDADZUMI.

They are the same as (280 281), but for summer use.

(302.) HIBASHI (tongs).

A pair of iron sticks with a handle of mulberry wood. Their use has already been described.

(303.) INCENSE CASE OF SHELL.

This shell was obtained at Matsuura in the province of Kii. Its use is to hold pasted incense materials, especially those which are used with tea in spring and winter.

(304.) KWAN (rings).

The material is iron and the place of production is Kioto. Their use has already been described.

(305.) MITSUBAIOKI (feather duster).

These feathers used are from Hokkaido (northern provinces).

(306.) HAIBOROKU (earthenware dish).

The quality of ash dishes differs in summer and winter use.

(307.) HAISAJI (ash ladle.)

The use of this has already been described.

(308.) HANDABOROKU (pottery dish).

Imado ware, representing the Raku-ware of Kioto. This is used for removing the ashes from fireplaces.

(309.) NAGA-HIBASHI (long tongs).

A pair of coloured-iron sticks used for both furnace and fireplace in the floor, in putting in and taking out fuel.

(310.) HAISAJI (ash ladle to clean the bottom of furnace.)

The material is copper. It is used for putting in and taking out ashes from Furo in summer.

(311.) HAISAJI (ash ladle, to clean the bottom of fireplace).

The material is copper. Its use is the same as above in winter.

(312.) IRON KETTLE.

The lid is bronze. Its use is to boil water. The kettle which has the figure of a wet crow is in imitation of the one manufactured by a man named Sano Temmei in the province of Shimotsuke about the period of Tembun.

(313.) HISHAKU.

The place of manufacturing as well as the material are the same as the *Hishaku* previously referred to: a slight difference existing in the handle, and its use is for winter.

(314.) Futaoki (lid rest).

The material is the bamboo produced in Kioto. The method of arranging the joints is slightly different in furnace and fireplace use. It is employed for placing the lid of the iron kettle.

(315.) Kasanedansu (nest drawers).

The material used is the wood of *Faullownia imperialis*, lacquered and called Shunkei-nuri. The Shunkei-nuri is one of the kinds of lacquer work first invented by a person who is named Shunkei, the colour is a light yellowish-brown. This has four drawers with iron pieces attached; the size is 3·4 *shaku* high, 3 *shaku* broad, and 1·4 *shaku* thick. Its use is to keep clothes in.

(316.) Yodansu (private drawers).

The material is mulberry-tree, with the figures of flowers and birds lacquered in gold.

This is composed of six drawers and two shelves, all of which are made to lock. The height and breadth are 2 *shaku* each. It is a most useful appurtenance to the sitting-room.

(317.) Kodansu (small drawers).

The ground is of Jindai sugi (kind of cedar wood), lacquered a glossy greenish-black colour on the back surface, and the collection of Chinese precious articles are gold lacquered on copper colour. The size is 1·05 *shaku* high, 1·5 *shaku* broad, and 0·95 *shaku* deep.

Class XXXI.

Bath, Bathing Requisites, etc.

(318.) Model of a Public Bath-House.

The model is the one-twentieth part of the real one: the depth of which is 72 feet and the front 30 feet.

A. is the entrance for males, and within it is an unpaved courtyard of 36 square feet, wherein to place the Geta (wooden clogs).

B. is the entrance for females, with a similar courtyard.

C. is a board with a tariff of prices to hang in front of the entrances.

D. is called Bandai (a stand), wherein sits the man who takes the money and looks after the bathing.

E. are called Geta-dan (shelves) whereon the Geta are stored. (Each for males and females.)

F. is the place for undressing. (Ditto.)

G. are the shelves to hold the clothes. (Ditto.)

H. is the Nagashi, a kind of preliminary bath. (Ditto.)

I. is a cold-water reservoir to which small tubs belong. (Ditto.)

J. is a reservoir called Okayu, containing warm water. (Ditto.)

K. is a round tub, used for drawing both warm and cold water. (Ditto.)

L. is the Tomeoke, a similar tub for a superior class of visitors. (Ditto.)

M. is called Zakuro-guchi. (Ditto.)

N. is the bath-tub or the place where the bathing is taken; it may be made sometimes lower where no Zakuro-guchi is built. (Ditto.)

O. is the well where well buckets are hung by a rope.

P. is a water tub wherein the water drawn from the well is kept.

Q. is the cistern from whence the water drawn from the well is put into the bath-tub.

R. is the place to keep the boiling water, and communicating with the tub of Okayu (*J.*)

S. is the place where a furnace for boiling water is placed; there are two furnaces —one is called Shita-gama, which boils the water, and the other is Waki-gama.

T. is the chimney.

U. is the place of ingress and egress for firemen.

V. is an up-stairs apartment, which is furnished for tea drinking and for resting after taking the bath.

W. is another shelf to put wooden clogs on.

X. is a standing copper boiler, to make tea for bathers.

Y. is called Bunko (bamboo box pasted with paper), in which to put the bathers' clothes.

Z. is a section of the interior.

(319.) Model of a Private Bath and Dressing-Room, showing the Interior Arrangements and Fittings.

A. is the entrance, *B.* the dressing-room, *C.* the closet, where brushes, combs, soap, towels, &c., are generally kept, *D.* a kind of mantlepiece whereon a looking-glass is generally placed, *E.* the door leading to the bath-room proper, *F.* the bath, *G.* cold-water tank, *H.* a step to get down to the bath, *I.* pail and tubs, *J.* the ventilating window which opens and shuts with a slide, and *K.* the outlet door, where a man can enter to supply fresh water to the bath-tub. This tub has a copper-shaft which is partly covered by a vertical board, so that the bather may not touch the heated shaft. In the shaft there is a grate upon which the charcoal fire is lighted to heat the water in the bath. The temperature of the water is regulated by placing a damper on the top of the shaft.

In the model, the joint of the shaft to the bottom of the tub does not seem to be water-tight, but in real baths it is of course water-tight, being well caulked.

(320.) Yukata (a thin garment, worn generally just after taking a bath).

The material is cotton, and it is made the same way as other kinds of ordinary garments, but has *Hirosode*, or wide sleeves. In ancient times every one took a bath with a yukata on, but at the present day its use is to wipe off the perspiration just after a bath.

(320a.) Yukataji (cotton cloth for making bathing clothes).

(321.) Tenugui (towel).

Cotton cloth of a fixed breadth is cut into lengths of about 2½ *shaku*. Generally they are furnished with all sorts of designs, but some have no designs at all. Their chief use is to wipe the hands on, and they are carried by every one for his daily use. Besides this, there is a kind called *Asetenugui*, made of coarse cotton cloth, and is used only in summer for wiping off the perspiration. The size of this is smaller than that of a common Tenugui.

(322.) Pumice Stone.

This is used as a bath requisite.

(323) Nukabukuro (small cotton bag to put rice bran in).

This is used for washing the face when taking a bath.

(324.) Honokidzumi (cake of hard charcoal).

Charcoal made of *Magnolia hypoleuca*, and used for washing nails and soles of feet.

(325.) Hechima (fibres of *Luffa petola*).

This is also used for washing the hands and feet.

(326.) Soaps.

Soaps are the usual washing materials.

(327–329.) Perfumery.

They are made of pæony, rose and chrysanthemum respectively.

(329a.) Oil from Seeds of Tsubaki (*Camelia japonica*).

This is used for hair ointment.

(330.) KANATARAI (metal tub).

A brass tub used to hold the warm water for washing face and hands.

(331.) HOT WATER JAR.

This is also made of brass, is furnished with a handle, and is used for carrying hot water.

(332.) UGAIJAWAN (mouth-cleaning cup).

A brass cup, used only for cleaning the mouth.

(333.) TOOTH POWDER (and box).

This is the powder used for cleaning teeth by means of a tooth-brush.

(333A.) TOOTH-BRUSH CASE.

This is an oblong wooden box, with a handle representing a sparrow, attached; a division is made with a wooden board, the brush being put into the larger and the powder into the smaller space.

Keshodogu (*toilet services*), superior quality. (334–343.)

(334.) KAGAMI (mirror with case).

This is made by smoothing and polishing a round copper plate, and is finished by rubbing with mercury. There are two mirrors, wrapped with red silk cloth, exhibited here. The case is made of wood, gold lacquered; the mirror and the case are put on the mirror stand, and will reflect the face as well as hair while making one's toilet. Of the two mirrors exhibited, one is 8 *sun* and the other 6 *sun* in diameter.

(335.) MIRROR STAND.

This is also made of wood and gold lacquered.

(336.) COMB BOX CONTAINING NECESSARY UTENSILS.

A box in which combs and certain toilet materials are arranged, namely, rouge brushes, used for rouging the lips. The handles are of gold lacquer work.

Powder applier of ivory.

Mayutate-gu (ivory instrument), used for painting the eyebrows.

Powder wrapper of paper.

Konedzumi, kind of black ink used for blacking certain parts of the forehead in a peculiar way.

Feather brush, for blackening the teeth; the handles are gold lacquered.

Ojóro (brushes used in powdering the face), the handles of which are also gold lacquered.

Combs, gold lacquered.

Kushibarai (brushes used for cleaning combs).

Binsui-ire (gold lacquered wooden vessel, used for holding water for toilet purposes).

Hair oil case of wood, gold lacquered.

Razor case, to hold two razors.

Rouge cup, a small cup, in which rouge is kept dry.

(337.) WATASHIZANE-BAKO (gold-lacquered box, containing tooth-blackening materials); such materials are:—

Watashizane, or silver bridge over the mimidarai (wooden tub with handles), used for holding dirty water for tooth-blackening.

Silver pot, used for boiling tooth-blackening stuffs.

Ohagurogara (a small plate, used for spreading the tooth-blackening stuff). Gold lacquered box for keeping the gall-nut used for blackening the teeth.

(338.) MIMIDARAI (wooden tub with handles, gold lacquered).

This tub is used for holding dirty water from the mouth at the time of blackening the teeth.

(339.) GENJIWA (gold-lacquered wooden ring to put the mimidarai on).

(340.) UGAIJAWAN (wooden cup, gold lacquered), with stand.

This cup is used for holding warm water for cleansing the mouth after blackening the teeth.

(341.) TOWEL HORSE.

This is also of wood, gold lacquered.

(342.) TARAI (wooden tub, gold lacquered).

This is used for holding warm water to wash the face with.

(343.) YUTO (wooden jug, gold lacquered).

This vessel is used for pouring warm water into the above-mentioned tub.

Keshodogu (*toilet services*), inferior quality. (344–354.)

(344.) KAGAMI (mirror with case.)

(345.) MIRROR STAND.

(346.) COMB-BOX, containing necessary utensils.

Its contents are the same as those of the superior quality in variety.

(346A.) COMBS IN PAPER WRAPPER.

This wrapper is made of a thick kind of paper called Otaka, oiled and lacquered, in which a certain number of several combs are wrapped.

(346B.) HAKUBOTAN, a white powder used for the face.

(346C.) MUTSUNOHANA, another white powder, used for the neck.

(346D.) MAYUHAKE (toilet brush).[1]

This is made of deer's wool, bound with fine brass wire to a short bamboo handle. It is used for powdering the face.

(346E.) OSHIROI-TOKASHI (vessel for dissolving white powder).

Earthen nest-box, used for dissolving white powder.

(346F.) SAKURAKA (hair oil).

(346G.) MOTOYUI (paper cord).

This is made of paper rolled into a cord and smoothed. There are two kinds of Motoyui, white and black; the latter is blackened with Japanese ink. They are both used to tie up the hair.

(346I.) ROUGE CUP.

This is a vessel for containing rouge to paint the lips.

(346J.) SCISSORS.

(346K.) FALSE HAIR.

(347–353.) MIMIDARAI AND ITS STAND, UGAIJAWAN, TOOTHPOWDER CASE, TOWEL HORSE, TARAI AND YUTO.

They are the same as those of the same name above mentioned, but inferior in quality.

(354.) CLOTHES-HORSE.

This is wooden frame-work lacquered.

House Cleaning Apparatus. (335–369.)

(355.) Model of a Tewoke or Bucket.

The diameter and height of this are each about 1 *shaku*, and the length of the handle about 7 or 8 *sun*. It is a utensil for carrying water within the house. It is made of all sizes.

(356.) Model of Hishaku (dipper).

This is a small round box of about 2½ sun in height, made of wood or bamboo, in the form of long cylindrical tub. It has a handle of bamboo or other wood about 15 *sun* long.

(357.) Model of a Bamboo Broom.

Small branches of bamboo are fastened to another longer piece about 3 *shaku* long and tied with wistaria vine. This is used for sweeping walks and gardens.

(358.) Model of a Tearai-oke (a tub for washing).

In Japan tubs are made of several pieces of thin and rounded board with a round and flat board at the bottom, and fastened with bamboo, iron, brass, or copper hoops. This particular tub has three broad feet; the actual size is 1 *shaku* diameter, and 2 *shaku* depth. There are many other kinds of various sizes. The *Tearaei-oke* is a general wash-tub for scullery use. It is vulgarly called Hanzo.

(359.) Model of a Broom of the palm fibre.

Palm tree fibre is fastened to a bamboo stick, and is tied on with hempen thread or iron wire. It is used for sweeping rooms.

(360.) Model of a Kusaboki (broom, made of grass).

It is made by tieing up dried *Hahakigi* (grass) in lengths of 3 *shaku*. It is only used for sweeping gardens.

(361.) Model of a Saihai (duster).

This is made by fastening pieces of narrow slips of paper to a bamboo stick of 2 *shaku* in length. It is used for removing dust from walls, doors, and furniture.

(362.) Model of Kebataki (feather duster).

Made by fastening feathers to a bamboo stick of about 1 *shaku* long. Its use is similar to that of the *Saihai*.

(363.) Haneboki (feather duster).

Made by tieing two or three wings together. It is a necessary accessory to a tea room.

(364.) Model of Gomitori (dust remover).

Made of small pieces of wood, to which a handle is attached. It is an appliance with which to remove dirt collected in gardens by sweeping.

(365.) Model of Chiritori (dust remover).

Made of pieces of bamboo or other wood covered with paper. Its shape is much like that of the *Gomitori*, and it is principally used for removing house refuse.

(366.) Model of Fukin (house cloth).

It is made of two pieces of cloth sewed together with hempen thread. It is used for wiping the house.

(367.) Model of Tawashi (mop).

Made by tieing palm-tree fibre into a round bundle, with copper wire; it is 1 *sun* in diameter, and is used for washing kitchen utensils.

(368.) Model of a Broom.

Made by tieing up a bundle of broom upon a bamboo stick; it is used for sweeping rooms.

GROUP IIIa.—AMBULANCE.

Class XXXIa.

Aid to Sick and Wounded in War.

The Ambulance in the Imperial Japanese Army.

(1.) Stretcher for Conveyance of the Wounded in the Field.—Consists of a stout canvas fastened to a bamboo pole on each side, and tipped with an iron rod at each end. Bamboo is preferred to other materials, as it is light, tough, and elastic.

(2.) Stretcher for the same Purpose as above.—Is made entirely of bamboo in a sort of meshwork attached to two bamboo-poles as above. The bamboo meshwork is very strong, yet highly elastic.

(3.) Field Lazarette (Ambulance), Pair of Trunks.—Each measuring about 64 *c.m.* in length, 32 in height, and 36 in width and containing:

(A.) The chest, enclosed in a leather case with the lining of cane basket-work, contains chiefly provisions for a field dispensary.

In the middle of the upper tier there is a porcelain slab to serve as a dispensing table; and on each side, compartments for medicine bottles, upwards of fifty in all.

In front it is provided with a set of drawers for miscellaneous articles, such as clinical thermometers, stethoscopes, pencils, labels, sealing-wax, candles, matches, corks, measuring glasses, glass and earthenware mortars, rods' spoons, balance, pewter drinking-cups, &c.; in another set of the drawers are silk, pins, pocket-case instruments, scissors, forceps, gag, wooden and paper boxes for pills, &c. The lowest drawer is filled with a number of tin-boxes for plaster of Paris. Bandages, charpie, sponges, cotton-wool, &c., are packed in any available spaces.

(B.) Outwardly the same as (A.), but internally it is a tin-box furnished with shelves and drawers, containing mainly surgical instruments and appliances, viz., a case of instruments for major operations (the box being encased in thick leather), a case of catheters, strap, grinding-stone, sticking-plaster, elastic tubings of various sizes, Esmarch's bandage, retractors, raspatories, cauteries, lamp, ice-bags (made of Japanese paper), oil paper, &c.

In the middle tier are splints, rollers, charpie, porringers, a case of bistouries, &c. In the lower, a case with stomach pump, charpie, rollers, cotton-wool, &c. Bandages, charpie, sponges, and cotton-wool may be filled in in any available space, as in the case of (A.), and will serve as packing to prevent breakages.

(4.) Knapsack for Field Dispensary.—The contents are as follows: Lentin's pliers, hypodermic injection syringe, rollers, shawl bandages, splints, pins, adhesive plaster, pewter cup, porringer, sponges, cotton-wool, lint, a few bottles containing Hoffmann's Anodyne, solution of ammonia, and chloroform; quinine pills, compound rhubarb pills, morphia pills, bicarbonate of soda, Dover's powder. A leather waist-band attached with a bag for a pewter water bottle.

(5.) Splints Made of Cedar Bark Extemporaneously.—Cedar bark can be shaped at will according to requirements. It is soft and elastic, but has sufficient strength for the purpose.

(6.) Bamboo split into halves can be made easily into a hollow and stiff splint.

(7.) Bamboo-plaited splints may be adapted to fit to the injured part.

(8.) Irrigator.—A cylinder consisting of a single internode of the bamboo, the bottom being the natural septum in the node, just above which an india-rubber tube is inserted as an ordinary instrument.

(9.) A Bamboo cylinder for water is simply an internode of the bamboo with holes for inlet and outlet of water, the nodes above and below serving as the cover and bottom.

Class XXXIb.

Transport.

(1.) Stretcher for Cholera Patients.

The model is $\frac{1}{20}$ of actual size. It was used for carrying cholera patients, especially those among the lower classes of the people, from their houses to a Cholera Lazarette, in the epidemic which visited Tokio in 1882. Its shape is nearly triangular, and it is covered with bamboo screens on all sides. It is fitted with a straw bed and cotton pillow, and has a wooden rod through the top for carrying it. A tin box is also placed in it to receive the evacuations of the patients. The principal advantages of this stretcher are that it can be made in a short period of time and at a small expense, that it can be carried about with great convenience on account of its being very light, and that it can be very well ventilated by the bamboo screens which cover it. A large number of these stretchers were made and used by the sanitary and police authorities of the city of Tokio in 1882.

(2.) Model of Kago for Ladies. (Sedan Chair.)

(3.) Jinrikisha (Hand Cart).

GROUP Va.—METEOROLOGY IN ITS RELATION TO PUBLIC HEALTH.

Class XLVIb.

Diagrams and Tables.

Diagrams and Tables relating to Climate and its Relations to Disease (in English).

(1.) Diagram showing five day mean relative humidity for the years 1876–1883, Tokio, Japan.

(2.) Diagram showing amount of rain in five day periods for the years 1876–1883, Tokio, Japan.

(3.) Diagram showing five day mean air temperature for the years 1876–1883, Tokio, Japan.

(4.) Diagram showing number of observations of wind under 16 points in each month for the year 1883, at Nagasaki, Osaka, Kioto, Tokio, Niigata and Hakodate.

(5.) Diagram showing number of observations of wind under 16 points in each month for the years 1876–1883, Tokio, Japan.

(6.) Weather-maps for the year 1883, Imperial Meteorological Observatory, Tokio, Japan.

(7.) Ditto, for the months of January—April, 1884.

(8.) Report of the meteorological observations for the months of July—December, 1879, Imperial Meteorological Station, Wakayama, Japan.

(9.) Ditto, for each month and the year 1879, I. M. Station, Hiroshima, Japan.

(10.) Ditto, for each month and the year 1880, I. M. Station, Hiroshima, Japan.

(11.) Ditto, for each month and the year 1880, I. M. Station, Nagasaki, Japan.

(12.) Ditto, for each month and the year 1880, I. M. Station, Wakayama, Japan.

(13.) Ditto, for the months of October—December, 1880, I. M. Station, Kioto, Japan.

(14.) Ditto, for the year 1881, I. M. Observatory, Kioto, Japan.

(15.) Ditto, for the year 1881, I. M. Observatory, Wakayama, Japan.

(16.) Ditto, for the year 1881, I. M. Station, Nagasaki, Japan.

(17.) Ditto, for the year 1881, I. M. Observatory, Hiroshima, Japan.

(18.) Ditto, for the months of July—December, 1881, I. M. Station, Nobiru, Japan.

(19.) Report of the meteorological observations for the year 1882, Imperial Meteorological Station, Aomori, Japan.

(20.) Ditto, for the year 1882, I. M. Station, Osaka, Japan.

(21.) Ditto, for the year 1882, I. M. Station, Kochi, Japan.

(22.) Ditto, for the year 1882, I. M. Station, Hiroshima, Japan.

(23.) Ditto, for the year 1882, I. M. Station, Nobiru, Japan.

(24.) Ditto, for the year 1882, I. M. Station, Kanasawa, Japan.

(25.) Results of the meteorological observations for the lustrum 1876–1880, I. M Observatory, Tokio, Japan.

(26) TABLE showing the meteorological observations in their relation to contagious or infectious diseases during the 15th year of Meiji (1882), in 15 Ku (wards) in Tokio, Japan.

(27.) TABLE showing the meteorological observations in their relation to contagious or infectious diseases during the 15th year of Meiji (1882) in upper and lower Ku (wards) in Kioto, Japan.

(28.) TABLE showing the meteorological observations in their relation to contagious or infectious disease during the 15th year of Meiji (1882) in Wakagama Ku, Japan.

(29.) TABLE showing the meteorological obervations in their relation to contagious or infectious disease during the 15th year of Meiji (1882) in Hiroshima Ku, Japan.

STATISTICAL TABLES RELATIVE TO PUBLIC HEALTH, AND LITERATURE AND PUBLICATIONS RELATIVE TO GROUPS I., II. AND III.

(1.) TABLE showing the comparison of births and deaths in Japan during the 15th year of Meiji (1882). (From No. 1 to 29 in English).

(2.) TABLE showing the number of births, marriages and deaths in Japan during the 15th year of Meiji (1882).

(3.) TABLE showing the mortality in Japan by causes and ages during the period of the 15th year of Meiji (1882).

(4.) Table showing the mortality in Japan by causes and sexes during the 15th year of Meiji (1882).

(5.) TABLE showing the mortality in Japan by causes and occupations during the 15th year of Meiji (1882).

(6.) TABLE showing the mortality in Japan by causes during the period from 11th to the 15th year of Meiji (1877–1882).

(7.) MAP of Japan showing the rate of deaths per 1000 inhabitants.

(8.) TABLE showing the number of cases of infectious or contagious diseases in Japan in each month of the 15th year of Meiji (1882).

(9.) TABLE showing the cases of infectious or contagious diseases by occupations in Japan during the 15th year of Meiji (1882).

(10.) TABLE showing the number of cases of typhus fever by ages in Japan during the 15th year of Meiji (1882).

(11.) TABLE showing the number of cases of typhoid fever by ages in Japan during the 15th year of Meiji (1882).

(12.) TABLE showing the number of cases of diphtheria by ages in Japan during the 15th year of Meiji (1882).

(13.) TABLE showing the number of cases of dysentery by ages in Japan during the 15th year of Meiji (1882).

(14.) TABLE showing the number of cases of small-pox by ages in Japan during the 15th year of Meiji (1882).

(15.) TABLE showing the number of cases of cholera by ages in Japan during the 15th year of Meiji (1882).

(16.) TABLE showing the number of cholera patients and of deaths therefrom in Japan during the period from the 10th to 15th year of Meiji (1877–1882).

(17.) CHART showing the rise and fall of cholera cases during the period from the 10th to the 15th year of Meiji in Japan (1877–1882).

(18.) TABLE showing the number of vaccinations in Japan during the period from the 10th to the 15th year of Meiji (1877–1882).

(19.) CHART showing by colours the number of cases of infectious or contagious diseases in Japan.

(20.) TABLE showing the weekly reports of contagious or infectious diseases in Japan during the 15th year of Meiji (1882).

(21.) TABLE showing the number of cases of contagious or infectious diseases in Japan during the year 1883.

(22.) TABLE showing the reported number of persons, by ages, affected by poisons during the period from the 14th to the 16th year of Meiji (1881–1883).

(23.) MAP of Tokio showing the routes and water mains.

(24.) MAP of Japan showing the localities of mineral springs.

(25.) TABLE showing the analysis of remarkable mineral springs in Japan.

(26.) TABLE showing the number of mineral springs in Japan.

(27.) TABLE showing the analysis of food.

(28.) TABLE showing the analysis of cereals.

(29.) TABLE showing the analysis of tangle, soy, and soy bean.

(30.) FIRST and Second Annual Reports of Central Sanitary Bureau, July 1875—June 1877 (in Japanese).

(31.) THIRD Annual Report of Central Sanitary Bureau, July 1877—June 1878 (in Japanese).

(32.) FOURTH Annual Report of Central Sanitary Bureau, July 1878—June 1879 (in Japanese).

(33.) FIFTH Annual Report of Central Sanitary Bureau, July 1879—June 1880 (in Japanese).

(34.) BULLETIN of Central Sanitary Bureau, Nos. 1–38. 38 pamphlets. (In Japanese).

(35.) NOTIFICATIONS of Central Sanitary Bureau, Nos. 1–40. 40 numbers. (In Japanese).

(36.) DESCRIPTIVE Catalogue of the Exhibits by the Central Sanitary Bureau at the Second National Industrial Exhibition, Tokio, 1881 (in Japanese).

(37.) STATISTICAL Tables, showing the number of births, marriages, and deaths in the chief cities of Japan, 1880 (in Japanese). 1 vol.

(38.) DITTO, 1882. 1 vol.

(39.) REPORT on Cholera in Japan, 1877 (in Japanese).

(40.) REPORT on Cholera in Japan, 1879, with appendix (in Japanese). 2 vol.

(41.) JOURNALS of Japanese Society of Health, Nos. 1—12 (in Japanese).

(42.) FIRST and Second Annual Reports of Central Sanitary Bureau, July 1875—June 1877 (in English).

(43.) THIRD Annual Report of Central Sanitary Bureau, July 1877—June 1878 (in English).

(44.) FOURTH Annual Report of Central Sanitary Bureau, July 1878—June 1879 (in English).

(45.) REPORT on Cholera in Japan, 1877 (in English).

(46.) TABLE showing the number of births, marriages, deaths, &c., in Japan in certain periods, specially prepared for the Second National Industrial Exhibition, Tokio, 1881 (in English).

*(47.) HONCHO-SHOKU-KUWAN. Treatise on the Japanese foods. 12 vol.

(48.) FU-KEN-BUTSO-SAN-HIO. Principal productions from Fu and Ken. 2 vol.

(49.) SHO-KOKU-SHI-MEI-ROKU. Enumerations of the Japanese Papers. 1 vol.

(50.) KAI-BARA-YOH-JO-KUN. Kai-bara's Hygienic Instructions. 4 vol.

(51.) SEI-YO-YOH-JO-RON. Treatise on Hygiene, translated from some European works. 2 vol.

(52.) YEI-SEI-SHIN-RON. On public health. 2 vol.

(53.) YEI-SEI-HAN-RON. On public health. 2 vol.

(54.) YEI-SEI-GAI-RON. On public health. 3 vol.

(55.) FU-TSOU-YEI-SEI-GAKU. Popular information of public health. 2 vol.

(56.) YEI-SEI-GEN-KO-KISOKU. Laws and regulations relating to public health in Japan. 1 vol.

* From (47) to (93) all in Japanese.

(57) YEI-SEI-GAKU. On public health. 1 vol.

(58.) YU-DOKU-SOH-MOKU-DZU-SETSU. Descriptions of poisonous plants. Illustrated. 5 vol.

(59.) DOKU-HIN-BEN-RAN. Illustrated handbook of poisonous plants. 2 vol.

(60.) KWA-BUTSU-TOZO-HEN. On preservation of fruits. 2 vol.

(61.) SHO-SAI-FU. Treatise on vegetables. 2 vol.

(62.) HOKU-YETSU-SETSU-FU. On the snow regions of Japan. 7 vol.

(63.) CHA-SETSU-DZU-FU. Handbook of tea. 1 vol.

(64.) NIHON-SANKAI-MEISAN-DZU-YE. Descriptions of land and sea products in Japan. Illustrated. 5 vol.

(65.) NO-DOKU-WUO-KAGAMI. On edible fishes. 2 vol.

(66.) YEN-ROKU. Treatise on tobacco. 2 vol.

(67.) SATSU-GU-YEN-SO-ROKU. Treatise on tobacco in the provinces of Satsuma and Osumi. 1 vol.

(68.) NIHON-SAI-ZI-KI. Description of Japanese festival days. 4 vol.

(69.) OSHIYE-KUSA-ICHI-RAN. Popular instructions on Japanese industry. 30 sheets.

(70.) SHOKU-MOTSU-WAKA-HON-ZO. Instructive odes on food. 3 vol.

(71.) SUI-ZOKU-SHA-SHIN. Picture of fishes. 2 vol.

(72.) KISHU-KAN-KITSU-ROKU. Treatise on oranges in the province of Kishu. 1 vol.

(73.) KO-YEKI-KOKU-SAN-KOH. Profitable productions of Japan. 8 vol.

(74.) NOH-GIO-ZEN-SHO. Complete treatise on agriculture. 11 vol.

(75.) NOH-KA-YEKI. Farmers' profits. 7 vol.

(76.) KOH-YEKI-HI-JI-TAI-ZEN. Domestic economy. 5 vol.

(77.) NOH-MU-TO-KEI-HIO. Statistical tables of agricultural products. 2 vol.

(78.) HAKUBAI-KOKU-SAI-MOKU-ROKU. Catalogue of foreign vegetables. 1 vol.

(79.) SAN-KAI-MEI-BUTSU-DZU-YE. Descriptions of land and water products in Japan. Illustrated. 5 vol.

(80.) KEI-ZAI-YOH-ROKU. On Japanese industry. 7 vol.

(81.) YENOGU-SOMEKUSA-YAKUHIN-RIYAKU-SETSU. Tabular description of colouring and dyeing stuffs. 1 vol.

(82.) NIHON-SEI-HIN-DZU-SETSU. Descriptions of Japanese manufactures. Illustrated. 2 vol.

(83.) KAKKE-HATSU-MEI-RON. New treatment of Kakke. 1 vol.

(84.) KAKKE-RON. On Kakke (by T. Ishiguro). 2 vol.

(85.) DITTO. Ditto (by K. Hayashi). 1 vol.

(86.) KAKKE-SHIN-RON. On Kakke. 1 vol.

(87.) CHA-SETSU-SHU-SEI. On tea. 2 vol.

(88.) CHA-GIO-HITSU-YOH. Guide to tea manufacturers. 2 vol.

(89.) YAO-ZEN-RIO-RI-TSOU. Guide to Yao-zen's Cookery. 2 vol.

(90.) CHA-SHIKI-KA-GETSU SHU. On tea ceremonies. 4 vol.

(91.) NIHON-KOH-SEN-RON. Japanese mineral springs. 1 vol.

(92.) SHU-KO-JISSH. Descriptions of antiquities. Illustrated. 85 vol.

(93.) SHI-KI-GUSA. On tea ceremonies. 7 vol.

APPENDIX.

Objects for Internal Decorations and use in the dwellings, chiefly consisting of

"OBJETS D'ART DU JAPON,"

Exhibited by

A. B. YA, of Tokio,

West Central Gallery,

International Health Exhibition.

Bronze and Metal Works.
Lacquer Wares, ancient and modern.
Cloisonné Enamels.
Shibayama Works, inlaid works.
Carvings, in ivory, wood, and bamboo.
Cabinets.
Screens.
Porcelain and Stone Wares.
Satsuma Wares.
Paintings and Pictures.
Embroideries.
"Inro" portable medicine boxes.
"Netsuke" ivory and wood.
"Tsuba" sword hilts.
"Kozuka" knife-handles.
etc., etc., etc.

敦倫國恭
會覽博生衛國萬
教說品出省部文本日
月五年六十治明

A CATALOGUE WITH EXPLANATORY NOTES

OF THE

EXHIBITS FROM THE DEPARTMENT OF EDUCATION,

EMPIRE OF JAPAN.

VOL. XVII.

INTRODUCTION.

THE official communication from the English Government requesting the Japanese Government to partake in the International Health Exhibition, to be opened in London in May of the present year, was received by our Department of Education only in the middle of February last. The actual work of collecting exhibits was not therefore begun until the consent of the English Government was obtained, through its Minister resident in Japan, to the necessary delay there would be in completely arranging our section. The interval of time thus allowed us—the exhibits were shipped on May 11th—was too short to enable us to make a collection such as would fairly represent our educational system. Especially is it to be regretted, and we ask therefore the visitors' indulgence, that the exhibits on Technical Education, to which special attention was to be paid in this Exhibition, are very incomplete, for though this is no doubt due partly to the very recent introduction of Systematic Technical Education into our country, it is also in a large measure owing to the lack of necessary time.

The exhibits brought together are apparatus, instruments, and text-books in actual use, results of pupils' work, etc. Articles that are not attractive in appearance have been carefully left as they are, and not been purposely embellished for the Exhibition.

Although visitors would be able to understand the nature of each exhibit from the label accompanying it, the following catalogue with

explanatory notes on more important articles, is published with the hope that it may not be unwelcome to persons specially interested in educational matters. Those who are desirous of obtaining further information in regard to our educational system are referred to another publication: "General Outlines of Education in Japan," which can be obtained in the Japanese Section.

By order of the Minister of Education,

SEICHI TEJIMA, *Commissioner*,

Director of Tokio Educational Museum and Attaché Supérieur of the Department of Agriculture and Commerce.

Department of Education, Tokio, Japan.

NOTE.—This Catalogue was prepared before leaving Japan, but on arrival of the exhibits, it was found that many of those with which most pains had been taken had been spoiled by sea water on the passage, owing to the occurrence of fire on the steamer—such as the appliances, designs, works, &c., relating to art education, silk weaving and embroidery works by girls of the industrial school, and bronze works by the deaf and dumb boys, together with the articles and specimens showing different stages of the process of teaching—and as there is too little time to rearrange this catalogue, those which are not exhibited on this account have been marked with an asterisk [*].

S. T.

LONDON, *Sept.*, 1884.

CATALOGUE

WITH EXPLANATORY NOTES OF THE EXHIBITS

FROM THE

DEPARTMENT OF EDUCATION,

EMPIRE OF JAPAN,

IN THE

INTERNATIONAL HEALTH AND EDUCATION EXHIBITION,

HELD IN

LONDON, 1884.

DIVISION I.—HEALTH.

GROUP IV.—SCHOOLS.

Class XXXIV.

Designs and Models of Improved Buildings for Elementary Schools, Infant Schools and Crêches.

From the days of the feudal system, schools were established in each clan for both literary and military training. Buildings used for this purpose were totally different in style from those of to-day, and only very few of them are now left. School-buildings at present in use have been built mostly within the last ten years, and in many cases special attention was paid to the requirements of hygiene and school management. Models of two or three school-buildings of later construction are given as examples. In districts where no special school-building has yet been built, temples or private dwellings are being used temporarily.

(1.) Model of Elementary School attached to Tokio Normal School.

This elementary school, which is attached to, and stands within the grounds of the Tokio Normal School, under the immediate control of the Department of Education, is intended to serve as the model for schools of the same grade throughout the country, both as regards the methods of instruction and the construction of the building. To normal schools of all the *Fu* (municipalities) and *Ken* (prefectures) similar elementary schools are attached, to enable students to go through practical exercises in methods of instruction, and also to serve as models within their respective jurisdictions.

(2.) Ground Plan of Elementary School attached to Tokio Normal School.

(3.) Photograph of School Room, with Boys at Recitation. Elementary School attached to Tokio Normal School.

(4.) Model of Kiogoku Public Elementary School, Kiyoto.

This model represents only one of the blocks of buildings belonging to the school—the plan of the whole being given in No. 5. This school has been built in accordance with the directions for constructing school buildings issued by the Kiyoto Fucho (City Government) for its own jurisdiction, and may be said to be a typical specimen of the Japanese mode of construction. Many elementary schools have lately been built upon this model.

(5.) Ground Plan of Kiogoku Public Elementary School, Kiyoto.

(6.) Model of Hongo Public Elementary School, Tokio.

(7.) Ground Plan of Hongo Public Elementary School, Tokio.

(8.) Model of Bancho Public Elementary School, Tokio.

(9.) Ground Plan of Bancho Public Elementary School, Tokio.

The Tokio Fucho (City Government) has not issued any directions for school construction. The above two models will, however, suffice as examples of school-buildings in Tokio.

(10.) Directions for Construction of School-Buildings, and of Desks and Chairs for Use in Elementary Schools. Issued by Kiyoto Fucho (City Government).

(11.) Plan of Tokio Female Normal School Grounds.

(12.) Photograph of Tokio Female Normal School, with its adjuncts: Girls' Elementary School and Kindergarten.

Class XXXVII.

School Kitchens and Arrangements for School Canteens. Methods of Warming Children's Meals, etc.

(1.) Model of Students' Quarters, Tokio Female Normal School.

For the sake of female students who come from distant parts of the Empire, and also for convenience in instruction and administration, means are provided for lodging students within the grounds of the Normal School. The building used for this purpose, as shown in the model, contains not only sleeping-rooms but apartments for other purposes, as kitchens, bath-rooms, rooms for hair-dressing, etc. Students are required to do their own cooking, washing, etc., thus early accustoming themselves to household duties. It should be remarked that rooms in this building are made small on purpose; for instance, instead of one vast kitchen, which would be necessary if it were for the use of all, several small ones are provided. This system has been adopted in order to give home-like appearances to the building, and to give students the feeling of being in a private family as much as circumstances will allow. To this building, not only students supported by public expenses, but those studying by private means are admitted if they desire it. There are similar provisions made for the accommodation of students in some of the Female Normal Schools established by *Fu* and *Ken*. (Municipalities and Prefectures.)

(2.) Ground Plan of Students' Quarters, Tokio Female Normal School.

(3.) Models of Kitchen Utensils, in Use in Tokio Female Normal School.

These may serve as the specimens of utensils used in every Japanese kitchen.

(4.) Lunch-boxes for School Children, wrapped in Cloth. 3 forms.

The principal food of our people being rice, lunch-boxes differ naturally from those in use in other countries. Books are done up in cloth and carried about in the same way as lunch-boxes.

Class XXXVIII.

Precautions in Schools for Preventing the Spread of Infectious Diseases, School Sanitaria, Infirmaries, etc.

(1.) Directions to be followed in case Inmates of Students' Quarters are taken with Infectious Disease, with an account of Precautionary Measures adopted during recent Cholera Epidemics in Tokio. University of Tokio. (In Japanese and English).

Class XXXIX.

Special Apparatus for Physical Training in Schools, Gymnasia, Apparatus for Exercise, Drill, etc.

(1). Model of Government School for Physical Training.

This school is under the immediate jurisdiction of the Department of Education, and is established to teach gymnastics, physical education, and infantry manœuvres as adopted in our army. Its students consist of (1) Teachers of normal and other schools sent from various Fu (cities), and Ken (prefectures), at public expense to learn gymnastics, and (2) Students of institutions in Tokio under the direct control of the Department of Education. (For further details see Class LVI. No. 31. Explanatory remarks on Exhibits from Government School for Physical Training). As most of those who have finished their course here have become teachers in institutions established by *Fu* and *Ken*, as well as in village and ward schools, gymnastics have gradually come to be taught very widely. No. 10 of the present class is the set of gymnastic apparatus used in this school.

(2.) Photograph of Students going through Gymnastic Exercises, Government School for Physical Training.

(3.) Photograph of Boys going through Gymnastic Exercises, Elementary School attached to Tokio Normal School.

(4.) Photograph of Boys at various Sports, Elementary School attached to Tokio Normal School.

(5.) Sketch representing Girls at Play with various Toys.
For toys see Division II. Group VI. Class 47 No. 1.

(6.) Book on Gymnastic Exercises.

(7.) Ditto.

(8.) Simometer.

(9.) Dynamometer.

(10.) Set of Gymnastic Apparatus.

One of these apparatus—the canvas bag holding beans—is intended only for the use of young women.

(11.) Set of Apparatus used in Game of "Dakiu."

"Dakiu" (somewhat resembling the game of Polo) has come down from olden times, and may be said to be a national game of Japan. It is played both on foot and on horseback, school boys generally adopting the former course. See Nos. 12, 13, and 14.

(12.) Model of Game of "Dakiu" as played on Horseback.

(13.) Painting, representing game of "Dakiu" as played by feudal vassals of the Tokugawas, during the supremacy of that family.

(14.) Painting, representing game of "Dakiu," as played by school boys of the present day.

(15.) Set of Fencing Apparatus.

(16.) Sketch, representing Fencing Exercises.

(17.) Set of Apparatus for Archery Practice.

(18.) Sketch, representing Archery Practice.

(19.) Sketch, representing Exercises in "Jiujitsu" (kind of wrestling).

These arts (Fencing, Archery and Jiujitsu) were considered as an essential part of military training for a samurai (knight). As they afford opportunities for splendid physical exercises, they have been revived in some schools. See Nos. 16, 18, and 19, to get an idea of exercises in these arts. No. 18 represents the Archery practice of olden times.

Class XL.

Literature relating to Classes XXXIV-XXXIX. Models, Statistics, Diagrams, &c.

(1.) Chart containing :—
- (1.) Table of Health Statistics in Students' Quarters.
- (2.) Table of Ages for Admission and of Length of each Course.
- (3.) Table of Average Number of Hours for Study and Recreation for those in Students' Quarters. University of Tokio (in Japanese).

(2.) The same Chart (in English).

(3.) Table of Measurements of Twenty Individuals aged between 18 and 23, showing Rate of Growth and Development of Physical Powers within Fixed Periods under Systematic Exercises in Government School for Physical Training.

(4.) Health Register of Students, Tokio Female Normal School.

DIVISION II.—EDUCATION.

GROUP VI.—EDUCATIONAL WORKS AND APPLIANCES.

Class XLVII.

Kindergarten.

Owing to the recent introduction of the Kindergarten system into our country, there are as yet only very few of them. Of these, the most completely equipped is that attached to the Tokio Female Normal School under the direct control of the Department of Education. It was established in order to give students in the latter institution a practical acquaintance with Kindergarten methods, and is also intended as the model for the whole country. The number of Kindergarten will probably be considerably increased hereafter, as the Minister of Education has lately issued an order to the effect that children in Elementary Schools, when under six, should be taught according to Kindergarten methods.

A.—No apparatus or fittings for Crèches are exhibited.

B.—Games, Toys and Kindergarten Amusements.

(1.) Toys used in Girls' Elementary School and Kindergarten attached to Tokio Female Normal School.

These toys used both in the Girls' Elementary School and Kindergarten are calculated to help the development of the mind and body of children. (*See No. 5 of the present Class and also No. 5 of Class* 39.)

(2.) Common Toys and Picture Books (54 articles). Japanese toys, of which specimens given here will give an idea, are often instructive in that they illustrate physical laws, and can be utilized for teaching the rudiments of science. In village-schools which cannot afford to buy physical apparatus, &c., teachers sometimes resort to these toys to impress more vividly what they are teaching.

(3.) Fancy Papers.

(4.) Folded Fancy Paper Figures (19 articles). Fancy papers have been common from olden times, and are extensively used by children to ornament boxes, &c. They are also cut and folded into various figures representing common animals, plants and utensils. This exercises children's ingenuity, and helps to make their fingers nimble.

(5.) Sketch, representing Kindergarten Children at Play with Various Toys, Tokio Female Normal School.

C.—Models and Appliances for Teaching.

(6.) Blackboard for use in Kindergarten attached to Tokio Female Normal School.

(7.) Ditto.

(8.) Kindergarten Gifts. Kindergarten attached to Tokio Female Normal School (16 articles).

As Froebel's methods are adopted in our Kindergarten, the gifts devised by him are used.

(9.) Charts for Moral and Object Teaching, Kindergarten attached to Tokio Female Normal School.

These are specimens of charts used to illustrate, and thus to impress more vividly, stories which are calculated either to arouse children's moral feelings, or to add to their store of positive knowledge. Thus, the first chart illustrates the story of certain monkeys in the province of Shinano who were very affectionate to their mother-monkey, and is intended to bring out the duty of filial piety. The second chart gives the story of the famous penman, Ono-no-Tōfoo. Having been greatly impressed by seeing a frog after repeated failures, and by persistent efforts, succeed in jumping up to a willow branch, this person took to studying writing, and by applying himself strenuously, became finally to be one of the three best penmen Japan has ever known. This, it need hardly be said, is intended to impress the necessity of patience and diligence. While these illustrate moral stories, the third and fourth charts represent respectively the rearing of silk-worms and the process of weaving, and are used to teach the first rudiments of Domestic Economy and Natural History.

D.—Specimens of Work done in Kindergarten.

(10–11.) Specimens of Work done in Kindergarten attached to Tokio Female Normal School. (1 Box and 1 Framed Piece.)

These have been devised more or less by the children themselves.

(12–13.) Specimens of Work done in Kindergarten attached to Sakurai Female School (private), Tokio. (1 Box and 1 Portfolio.)

(14–15.) Specimens of Work done in Kindergarten attached to Kōtō Public Female School, Tokio. (2 Portfolios.)

Class XLVIII.

Elementary Schools.

In schools of feudal times no chairs were used, scholars squatted on the matted floor and used very low tables. As desks and chairs are to be preferred, from the point of hygiene and school-management, they have now replaced the low tables in almost every school, and considerable attention is also being paid to their improvements. The courses of study have undergone equally great changes. While morals and writing were the chief topics of study, there are taught now, besides morals, reading, writing, and arithmetic, other branches like geography, physics, chemistry, and natural history even in Elementary Schools. This has naturally greatly increased the number of school text-books. The exhibits placed in this class will give an idea of the apparatus, fittings, text-books, &c., now in use in our Elementary Schools.

A.—Apparatus and Fittings.

(1.) Desk for use in Elementary School attached to Tokio Normal School.

(2.) Outfit of Elementary School Pupil, Elementary School attached to Tokio Normal School. (8 articles.)

An abacus is here included, as rapid methods of calculation by that instrument are taught. The copy-book that requires no ink but water only is one of the most convenient of recent inventions. As our children have to acquire difficult Chinese characters besides the forty-eight letters of the Japanese syllabary, the task before them is not to be compared with the comparatively easy one of learning an alphabet of only twenty-six letters. On this account, more hours are given to writing in our schools than is the case in those of Europe or America. Several exhibits following are apparatus for writing.

(3.) Box of Ink-stone for Indian Ink with Accessories, Elementary School attached to Tokio Normal School.

(4.) Box of Ink-stone for Red Ink with Accessories for Use of Teachers in Elementary School attached to Tokio Normal School.

After pupils have thoroughly mastered a certain number of characters, they write them out on clean paper. In correcting and marking these, teachers invariably use the red colour, and thus a stone for red ink becomes necessary.

(5.) Model of Adjustable Blackboard used in Elementary School attached to Tokio Normal School.

This model is one-third of the original article. It consists of two parts, placed one in front of the other, which can be slid up and down past each other by means of pulleys at the side, and be thus adjusted to the height of each child. What a scholar has put down below can then be easily pulled up for the inspection of the whole class.

(6–7.) School Room Abaci (2).

These are intended for use only in teaching. In all abaci, a bead above the cross-bar represents 5, while each of the five lower ones placed on a line stands for 1, thus making it possible to count 10 on every vertical line. These arbitrary values are rather hard to comprehend by children, and each bead, in No. 6 has therefore its value marked on it with dots. When these relations have been well grasped, No. 7 is used.

(8.) Apparatus for Teaching Fractions, Girls' Elementary School attached to Tokio Female Normal School.

This apparatus makes the relations of fractions comparatively simple and easy to comprehend by children. For the mode of using it, see Explanatory Remarks accompanying it.

(9.) Slate for Use in Schools.

(10.) Slate-Wipers (large and small).

(11.) Slate-Pencils (3 kinds).

(12.) Paper-Slate.

(13.) Paper Tablet-Slate.

(14.) Chalk.

(15.) Water-Colours.

(16.) Cube.

All these are necessary articles in every Elementary School.

(17, 18.) Desks for Elementary Schools (2).

These are intended for Elementary Schools which have no special desks for writing exercises. The upper surface of the desks, it will be seen, is made flat, as otherwise water in the ink-stone will spill over.

(19.) Model of Desk with two Boys seated. Made by Deaf-Mutes of Institution for the Blind and the Deaf-Mute, Kiyoto.

The desks and stools of this description are in use in the Institution for the Blind and the Deaf-Mute, and in Elementary Schools, in Kiyoto. It is claimed by the Director of the above institution that when scholars are made to sit with their body and hands arranged as in the model, their attention is fixed better on the thing before them, and that they moreover do not feel the cold as much as if they were in other positions. The same Director has also his own views in regard to desks, stools, and the modes of arranging them, for which *see Class* 54, *No.* 18.

(20.) FIGURE OF BOY, illustrating laws of determining maximum slope of back of stools.

This has also been devised by the Director of the Institution for the Blind and the Deaf-Mute, and been made by scholars of the same institution.

B.—Models and Appliances for Teaching, Text-Books, Diagrams and Examples.

(21.) MODEL OF CLOCK.

(22.) CABINET OF OBJECTS for Object-Lessons. Prepared by the Tokio Educational Museum.

This is a collection of nearly 200 common objects, and is used for Object-Teaching.

(23.) APPARATUS for Teaching Spelling.

(24.) NUMERAL FRAME.

(25.) MODELS OF GEOMETRICAL FIGURES. (1 BOX.)

(26.) CABINET OF COMMON JAPANESE WEIGHTS AND MEASURES for use in Elementary Schools.

(27.) GEARED TELLURIAN.

(28–74.) SET OF TEXT-BOOKS in use in Elementary School (for Boys) attached to Tokio Normal School. (47 works with 156 volumes, 26 charts and 5 rolls.)

These text-books relate to a number of subjects as Morals, Reading, Writing, Arithmetic, Geography, History, Drawing, Natural History, Physics, Chemistry, &c., but instead of referring each to its own class, they are all placed here as a set to give a general idea of text-books in use in Elementary Schools.

(75–109.) SET OF TEXT-BOOKS in use in Girls' Elementary School attached to Tokio Female Normal School. (33 works with 129 volumes, 2 portfolios, 7 charts.)

This set is essentially the same as that from Boys' Elementary School, with the only difference that books on Sewing and Etiquette—the subjects taught only to girls—are added here.

(110–135.) TEXT-BOOKS for Elementary Schools, edited by Department of Education. (26 works, with 74 volumes, 38 maps and charts, and 2 rolls.)

To replace objectionable text-books published by private persons, or to supply a want of text-books on certain subjects, the Bureau of Compilation in the Department of Education undertakes to issue from time to time model text-books, a set of which is here brought together. These are very extensively used in Elementary Schools, throughout the whole country.

C.—Specimens of Work done in Elementary Schools.

(136–141.) SPECIMENS OF WORK done in Elementary School (for Boys) attached to Tokio Normal School. Dictation Exercises, Map Drawings, Writings (with Teachers' Corrections), Musical Notes, Drawings, Examination Papers, &c. (24 volumes.)

(142–144.) SPECIMENS OF WORK done in Girls' Elementary School attached to Tokio Female Normal School. Examination Papers, Compositions, Writings, &c. (3 volumes.)

(145.) EXAMINATION PAPERS by Children of Elementary School attached to Tokio-Fu Normal School. (8 volumes.)

(146–148.) SPECIMENS OF WORK done in Kōtō Public Female School, Tokio. Compositions, Writings, Drawings (by children between 10 and 13), &c. (3 volumes.)

(149–150.) SPECIMENS OF WORK done in Sakurada Public Female School, Tokio. Compositions, Drawings. (2 volumes.)

(151–154.) SPECIMENS OF WORK done in Meirin Female School (private), Tokio. Original Verses, Writings, Compositions. (2 volumes, 2 framed pieces.)

(155–160.) SPECIMENS OF WORK done in Sakurai Female School (private), Tokio. Examination Papers, Drawings, Compositions (in English), &c. (6 volumes.)

It is to be regretted that the want of necessary time has not allowed us to collect specimens of school work from other districts besides Tokio—all the above exhibits being from that city only. But those given here will, it is hoped, give a fair idea of work done in our Elementary Schools. It is also unfortunate, though unavoidable, that examination papers, &c., are in a language not understood by Europeans. For specimens of needlework, &c., the visitor is referred to Class 49.

CLASS XLIX.

Domestic Economy in Schools for Girls.

A great deal of attention is paid to Domestic Economy in our Schools for Girls. Sewing is taught even in Elementary Schools, but as scholars in them are girls of only 11 or 12 years, nothing beyond the first rudiments is taught. Specimens of work done are shown in Nos. 17–22 of the present Class. In higher schools for girls and female normal schools, more advanced domestic arts are taught, and, as can be seen from specimens given in Nos. 14–16, students acquire a skill fully fitted to be turned to practical uses. Moreover, in schools for girls, where means are provided for lodging students, they are required to make themselves practically acquainted with the management of a kitchen, methods of cookery, arrangement of tables, and other useful household arts. In Kiyoto-Fu Female School, besides an advanced course of ordinary studies, special courses, generally extending over three years, are provided in various handiworks, as Sewing, Embroidery, Weaving, Rearing of Silk-Worms, Painting, &c., any one of which may be taken up at the option of students.

The reason why Sewing is carefully attended to in our schools is because an ordinary housewife in Japan has to do a great deal of sewing, in fact, so much, that nearly all clothes and dresses, except of most difficult kinds, are made at home, and there are comparatively few professional tailors and dressmakers. A girl who goes through only an elementary school is expected to have learned enough to make her fairly skilful with her needle with a little additional instruction at home.

As domestic arts have been taught hitherto mostly at home, text-books on these subjects are comparatively few.

A.—Models and Apparatus for the Teaching of Cookery, Housework, Washing and Ironing, Needlework and Embroidery, Dress-making, Artificial Flower-making, Painting on Silk, Pottery, &c.

*(1.) CHARTS for Teaching Domestic Economy for Use in Elementary Schools (6).

These charts have been prepared by Mohan Jiogakko, in the Prefecture of Tochigi, to illustrate terms in Sewing, Weaving and other domestic arts.

(2.) CHARTS for Teaching Sewing and Cutting of Cloth, with Handbook. For use in Elementary Schools. (A set.)

This was published by Fūkiokwai (a private school association in Tokio), for the purpose of teaching Sewing.

(3.) NEEDLE-BOX with Necessary Materials, for use in Tokio Female Normal School. (1 Set of 62 Articles.)

This is the ordinary needle-box used both in school and at home for holding instruments and materials necessary for sewing, as needles, threads, scissors, &c. As sewing is all done by hand and not on a machine, this needle-box, with the articles shown in the next exhibit, is all that is necessary for ordinary purposes,

(4.) Accessory Instruments for Sewing. For use in Tokio Female Normal School. (1 Box with 9 Articles.)

These articles comprising Flat-iron, Smoothing Iron, &c., are also necessary or sewing. As their forms differ from foreign instruments used for the same purposes, the methods of using them are also naturally different.

(5.) Set of Instruments for making Relief Pictures. For use in Tokio Female Normal School. (1 Box with 7 Articles.)

Making Relief Pictures is also adapted to women's nimble fingers, and is taught along with sewing in girls' schools. Specimens of work done are arranged further on with those of Sewing.

(6.) Sketch representing Girls of Tokio Female Normal School at Sewing Lessons.

Although chairs and desks are almost universally used in schools, Sewing and Etiquette are taught, sitting in the Japanese fashion on the matted floor.

*(7.) Model of Apparatus used in Weaving Ornamental Designs by Tsuzureöri Process. Kiyoto-Fu Female School. (1 Set of 6 Articles.)

This model shows the essential parts of the loom for weaving small pieces of ornamental cloth for portes-monnaie, &c., by the Tsuzureöri process. (1) is the design to be worked out; (2) is the shuttle for woofs; (3) are the bamboo sticks to which are fastened (4) threads arranged in two sets, each set holding alternate warp-threads together; (5) are the reeds through which warp threads are passed to keep them separate; (6) is the comb for bringing woofs close to one another. For the whole of a loom, and the process of weaving, see the Explanatory Notes from the School. In teaching this art, the following order is observed:—First, weaving of small pieces for portes-monnaie, &c., without any ornamental designs; second, weaving of similar small pieces, with designs and copying of such designs; finally, weaving of large pieces as window curtains, table covers, with fine and elaborate designs of animals, flowers, &c., and copying of such designs. For specimens of small pieces, see the fourth and fifth pieces in the Portfolio, No. 23; for large pieces see the table covers, Nos. 24 and 25.

*(8.) Set of Instruments for making Relief Pictures. Kiyoto-Fu Female School (1 Box with 5 Articles).

These instruments are essentially the same as those shown in No. 5. A design with birds and flowers, and the methods for cutting it out—see (6)—are shown in addition here. The order in which this art is taught is as follows:—First, small simple designs are worked out. Then boxes, plants, animals, human figures are attempted; and finally elaborate pieces for framing, &c., are undertaken. For specimens of work see the 8th, 9th, and 10th pieces in the Portfolio, No. 23.

*(9.) Illustrations of Process of Embroidery. Kiyoto-Fu Female School.

This exhibit illustrates the process of embroidery. The instruments used are the frame for keeping the cloth to be worked stretched, spools for gold threads, bamboo spools, needles, dish for dissolving white lead, and brushes (the last two for marking out designs on the cloth). In this course is taught at first embroidering of simple designs with gold thread, together with copying of designs and methods of stretching cloth on the frame; afterwards embroidering of more and more complex designs with copying of the same, and the laws of distribution of colours. For specimens of work see the 1st to 4th pieces in the Portfolio, No. 23.

*(10.) Illustrations of Different Stages in Preparation of Bordered Relief Pictures. Kiyoto-Fu Female School.

The instruments used in this are the same as those for ordinary relief pictures (see No. 8). In this course are taught first copying of designs, pasting thick paper on the back of designs, cutting out designs (leaving margins and principal lines, for instance, if leaves, leaving margins and large veins), pasting pieces of silks or other stuffs on the cut-out places, fixing of gold dust, &c. After these are mastered, elaborate designs with animals, plants, and characters are attempted. For specimens of work see the 11th to 14th pieces in the Portfolio, No. 23.

*(11.) Illustrations of Different Stages in Preparation of Patchworks. Kiyoto-Fu Female School.

In this kind of patchworks, designs are reproduced by *sewing* together pieces of stuff. To prepare them, the figures of animals, plants, or any other designs are cut out of thick paper, and then various stuffs are cut to fit those, and sewed together so finely with threads of the same colours as the pieces, that no stitches are to be seen and the designs look as if woven or dyed out. This art is taught to all students in sewing, as it is very useful in patching up accidental tears or holes in costly dresses, &c. For specimens of work see the 15th piece in the Portfolio, No. 23.

*(12.) Illustrations of Different Stages in Preparation of Patchworks. Kiyoto-Fu Female School.

This kind of patchworks is produced by *pasting* together different pieces, and is therefore only a species of relief pictures before mentioned (see No. 8). The method of preparation is as follows:—A design is first drawn on thin paper. This, being then placed on thick paper, is traced over with a metal or bamboo spatula. The design thus transferred, has its different parts cut out of the thick paper, and pieces of various stuffs are pasted on them. These are next put together with absolute exactness, and produce the given design. This art is taught to such of the students in sewing as desire it. For specimens of work see the 16th piece in the Portfolio, No. 23.

*(13.) Preparation of Special Kind of Embroidery. Kiyoto-Fu Female School.

This kind of embroidery is taught to all students as the first steps in sewing to give practice in handling needles. Designs are not drawn beforehand on cloth, but are simply worked out at sight. For specimens of work, see the 17th piece in the Portfolio, No. 23.

B.—Specimens of School-Work.

(14.) Specimens of Needlework by Scholars of Higher School for Girls attached to Tokio Female Normal School. (1 Box with 12 Articles.)

(15.) Specimens of Relief Pictures and Ornamental Knots. Higher School for Girls attached to Tokio Female Normal School. (1 Box with 26 Articles.)

The methods of tying ornamental knots are taught with sewing.

(16.) Specimens of Knitting and Models in Paper of Various Pieces of Clothing. (1 Box with 23 Articles.)

Knitting after the European style is taught also with sewing. Paper models will serve to give an idea of what our clothes are like.

(17.) Specimens of Needlework by Scholars of Girls' Elementary School attached to Tokio Female Normal School. (1 Box with 20 Articles.)

(18.) Specimens of Needlework by Scholars of Sakurada Public Female School, Tokio. (2 Boxes with 10 Articles.)

(19.) Specimens of Needlework by Scholars of Meirin Private Female School, Tokio. (8 Boxes with 48 Articles.)

(20.) Specimens of Needlework by Scholars of Kōtō Public Female School. (1 Box with 6 Articles.)

(21.) Specimens of Needlework by Scholars of Fukagawa Public Elementary School, Tokio. (1 Box with 4 Articles.)

(22.) Specimens of Needlework by Scholars of Sakurai Female School (private), Tokio. (1 Box with 8 Articles.)

(23.) Portfolio, with Specimens of Handiworks by Students of Kiyoto-Fu Female School.

The 1st–4th pieces are specimens of Embroidery.
„ 5th–7th „ „ Tsuzureöri.
„ 8th–10th „ „ Relief Pictures.
„ 11th–14th „ „ Bordered Relief Pictures.
„ 15th piece is a specimen of Patchworks by Sewing.
„ 16th „ „ „ Pasting.
„ 17th „ „ Special Kind of Embroidery.
„ 18th–22nd pieces are specimens of Painting from Life.
„ 23rd–24th „ „ Writing.

*(24.) Tsuzureöri Table Cover with Classical Designs. By two Students (aged respectively eighteen and nineteen) of Kiyoto-Fu Female School.

*(25.) Tsuzureöri Table Cover with Ornamental Designs. By Students of Kiyoto-Fu Female School.

In ordinary Tsuzureöri pieces, designs are good for one side only. In the present specimen, it ought to be specially noticed that the design is good for both faces, and the work should be appreciated accordingly.

Class L.

No Exhibits.

Class LI.

Science Teaching.

Realising the importance of teaching science to our children, the Department of Education has encouraged as much as possible its introduction to schools, and the first rudiments are taught already in Elementary Schools. As instruments, apparatus, and specimens are necessary for this purpose, the Department of Education has given articles of this description as prizes, whenever any school has merited a special reward. The prizes thus distributed are the same as the sets of instruments and specimens, given in the present class, and are prepared by the Tokio Educational Museum.

Science teaching has so far advanced in our country that in some schools as the Tokio Normal and Tokio Female Normal Schools, scholars have been interested to make their own apparatus for experiments.

A.—Apparatus and Models for Elementary Science Instruction in Schools.

(1.) Apparatus for Easy Experiments in Physics and Chemistry for use in Elementary Schools. (40 Articles.)

(2.) Models of Mechanical Powers for use in Elementary Schools. (6 Articles).

(3.) Set of Zoological Specimens for use in Elementary Schools. Prepared by the Tokio Educational Museum. (82 Specimens.)

(4.) Set of Apparatus for Collecting and Preserving Insects. Prepared by the Tokio Educational Museum. (1 box.)

These have been put together as a set for the use of school children.

(5.) Set of Dried Specimens of Japanese Plants for use in Elementary Schools, prepared by the Tokio Educational Museum. (101 Specimens.)

(6) SET OF APPARATUS for Collecting and Preserving Plants for use by School Children, prepared by the Tokio Educational Museum. (1 Box.)

(7.) SPECIMENS OF USEFUL JAPANESE WOOD for use of Schools. (100 Specimens.)

(8.) SET OF JAPANESE MINERALS for use in Schools. Prepared by the Tokio Educational Museum. (72 Specimens.)

(9.) MINERALS arranged to represent scale of Hardness.

(10.) SET OF SIMPLE PHYSICAL APPARATUS for use in Elementary Schools, Tokio Normal School. (38 Articles.)

These have been prepared by scholars of the Tokio Normal School under the direction of the teacher in physics, and are made up entirely of common everyday articles. It will be seen that bamboo, which is found abundantly everywhere in Japan, is used much. The construction of these apparatus is very useful in making scholars comprehend physical laws, and is moreover likely to be of service to them, should any of them ever find himself in an out-of-the-way school which cannot afford to buy a good equipment of apparatus.

(11.) PHOTOGRAPH of simple Physical Apparatus shown in No. 10. Tokio Normal School.

(12.) TOOLS used in making simple Physical Apparatus. Tokio Normal School. (52 Articles.)

These were used in constructing the physical apparatus given in No. 10.

(13.) SET OF SIMPLE CHEMICAL APPARATUS for use in Elementary Schools. Tokio Female Normal School. (31 Articles.)

These have been prepared by female students of Tokio Female Normal School under the direction of the teacher in chemistry with exactly the same objects as those given for No. 10. It will be seen that the cheapest and commonest articles have been used. Of course, these are inferior to, and do not last as long as more costly chemical apparatus, but in the hand of a good teacher may become very useful.

B.—Diagrams, Copies, Text-Books, &c.

(14.) "Easy Experiments in Physical Sciences." (1 Volume.)

C.—Specimens of School Work.

(15.) CHEMICALS prepared by Students of Tokio Female Normal School. (30) Specimens.)

CLASS LII.

Art Teaching.

Drawing is taught in Elementary Schools, in the case of boys from the intermediate grade, in that of girls from the lower grade upward. Here they are carried through only slate and pencil drawings, the method of teaching being always from the simple to the complex. In higher schools for girls and in private art schools, India-ink Drawing and Painting with colours are taught. The apparatus used in these cases are shown in No. 3 of the present class. As pupils usually copy the teacher's own drawings, or draw from nature, there is not much demand for printed drawing copies, which are on this account comparatively unsatisfactory.

There are three or four private schools for oil-painting, but as that art is not native to our country and is not taught in ordinary schools, no oil-paintings are exhibited here.

In the Kiyoto Art School, one of the most important institutions of its kind, there are two departments, the Art Department proper, and the Accessory Department. In the latter are taught Japanese and Chinese Literature, History, Physics, Chemistry, Mathematics, Geometry, and other studies accessory to art. In the former there are for the present two main branches, one for Fine Arts and the other for Industrial Arts. The first includes courses in Japanese, Chinese, and European Painting; the second branch comprises painting on porcelain and earthenware, on lacquerware, for dyeing, for embroidery and for weaving. Nos. 11–17 illustrate the methods of teaching these arts.

There are several schools of painting prevalent in Japan at the present day. To name the principal ones among them, there are the Schools of Kosé, Tosa, Sumiyoshi, Kano, Shijo, besides the two Chinese Schools, Northern and Southern, and European oil-painting. Class XXXIX. No. 18, is of the Kano School; Nos. 13 and 14 of the same class (representing the game of Dakiu), and No. 62 in the present class are in the Sumiyoshi style, a branch of the Tosa School. No. 63 is of the Shijo School, and Nos. 17 and 63 belongs to the Southern (Nanshiu) Chinese School.

A.—Apparatus, Models and Fittings for Elementary Art Instruction in Schools.

(1.) Drawing Desk for use in Elementary School attached to Tokio Normal School.

(2.) Set of Drawing Instruments for use in Elementary School attached to Tokio Normal School. (1 set of 5 Articles.)

The above two exhibits are for pencil drawings.

*(3) Apparatus and Materials for India-ink and Water-colour Painting. Tokio Female Normal School. (1 set of 13 Articles.)

These may be taken as fair specimens of a Japanese artist's outfit.

(4.) Set of Colours and Brushes for Painting on Porcelain and Earthenware. Department of Industrial Arts, Kiyoto Art School. (1 set of 13 Articles.)

Of this set, eight articles are colours and five are brushes. For steps, etc. in teaching this art, see the Portfolio, No. 11.

(5.) Set of Colours, Brushes, and Accessories for Painting on Lacquer-ware. Department of Industrial Arts, Kiyoto Art School. (1 set of 34 Articles.)

For the order followed in teaching this art, see the Portfolio, No. 12.

(6.) Set of Colours, Brushes, and Accessories for Painting Designs for Dyeing. Department of Industrial Arts, Kiyoto Art School. (1 set of 26 Articles.)

This is the art of painting designs on silk or muslin to be dyed. There are two principal styles, Yuzenzomé and Chiayazomé. For the method of teaching, see the Portfolio, No. 13, and for designs, the work entitled "A Collection of Ancient and Modern Designs," No. 47. In the present set, (1–16) are the various apparatus for keeping stretched the stuff to be painted; (7–15) for mixing colours, and (6–26) are the colours.

*(7.) Set of Colours and Brushes for Water-Colour Painting. Fine Arts Department, Kiyoto Art School. (1 Set of 43 Articles).

This set is used for painting in the Japanese, Chinese, and European styles, and consists of colours, and brushes both flat and round. This is a fair specimen of an artist's outfit, although there may be some slight differences, according to the school to which he belongs. The chart placed with this exhibit has three drawings of which the first and second show how to use colours and apparatus, and the third how to spatter gold dust. For steps in teaching Painting, see the Portfolios, Nos. 16 and 17.

B.—Designs, Copies, Text-Books, etc.

*(8.) Drawing Copy Books for Elementary Schools.

*(9.) Ditto.

*(10.) Ditto.

*(11.) Portfolio of Typical Designs, etc., for Porcelain and Earthenware. Department of Industrial Arts, Kiyoto Art School.

*(12.) Portfolio of Typical Designs, etc., for Lacquerware. Department of Industrial Arts, Kiyoto Art School.

*(13.) Portfolio of Typical Designs, etc., for Dyeing. Department of Industrial Arts, Kiyoto Art School.

*(14.) Portfolio of Typical Designs, etc., for Embroidery. Department of Industrial Arts, Kiyoto Art School.

This shows the art of painting designs on dresses, etc., to be embroidered. It can be begun only after ordinary painting has been mastered.

*(15.) Portfolio of Typical Designs, etc., for Weaving. Department of Industrial Arts, Kiyoto Art School.

(16.) Portfolio of Typical Designs, Drawings, etc., in Japanese style. Department of Fine Arts, Kiyoto Art School.

Although there are, as before mentioned, several schools of painting, the methods of teaching in use are not very different from those shown in this portfolio.

*(17.) Portfolio of Typical Designs and Paintings in Nanshiu (Southern) Chinese School. Department of Fine Arts, Kiyoto Art School.

*(18–56.) Collection of Copy-Books, Text-Books, Books of Paintings, and Drawings, etc. (39 Works with 168 Volumes.)

These contain copy-books, paintings, drawings of various schools, and will therefore serve to show differences of style among them. Among others, No. 56 (Collection of famous pictures of Japan and China) answers very well for this purpose. These works are also largely used by workers in industrial arts.

C.—Specimens of Art Work, etc., in Schools.

*(57.) Drawings and Maps by Students of Tokio Normal School.

*(58–61.) Drawings, etc., by Students of Tokio Female Normal School and of its Adjuncts: Higher Schools for Girls and Girls' Elementary Schools.

*(62.) Water Colour Paintings by Scholars of Sumiyoshi Art School (private), Tokio.

*(63.) Paintings and Writings by Scholars of Atomi Female School (private), Tokio.

*(64) Drawings by Scholars of Kiusen Gakko (private), Tokio.

Class LIII.

Technical and Apprenticeship Schools.

Before the Restoration, all handicrafts were taught in our country only by the method of apprenticeship, and this is still the prevalent mode. The apparatus and instruments used in various trades and in teaching apprentices are shown in Nos. 1–22. There is, however, at the present day, a tendency to give technical

education in schools, and the Department of Education has given it every encouragement, well knowing that nobody can become a skilled mechanic or head of a workshop, or teacher of technical education, without being first well-grounded in fundamental scientific principles, and that well-qualified persons are very much needed in these days, when factories and workshops are springing up on all sides. For instance, in some districts, it has been lately settled that boys in elementary schools should be given rudiments of technical education. Again, the Department of Education has just organised in Tokio a Technical School under its own jurisdiction. It is to be greatly regretted that all these having been but very recently started, no results can as yet be shown of them, and nothing beyond the photograph of the Technical School just spoken of, is exhibited here. In regard to other technical schools, public and private, such as Art Schools, Schools of Architecture, of Pottery, etc., the lack of time has not enabled us to prepare a large number of exhibits. The only institution tolerably represented being Kaikoshia, a private school of Japanese Architecture (see No. 23 and Nos. 32–41). Some of the exhibits from this school are certainly worth the visitor's attention, although even in this case, the representation is not such as could have been made, if sufficient time had been allowed.

A.—Apparatus and Reference-Books used in Teaching of Apprentices and in Schools of Architecture.

(1.) Blacksmith's Tools and Specimens of Blacksmith's Work. (1 set, with 18 articles.)

This set not only represents tools used in teaching apprentices, but those in general use by the trade. The same remark holds good of other sets of tools.

(2.) Metal-worker's Tools. (1 set, 33 Articles.)]

(3.) Wood-Sawer's Tools. (1 set, 11 Articles.)

(4.) Carpenter's Tools. (1 set, 93 Articles.)

(5.) Models of Wood-Joints. (32 Articles.)

This gives some of the many methods of joining pieces of wood made use of by carpenters. For the practical application of these methods, see the Model, No. 33.

(6.) Joiner's or Door-Maker's Tools. (1 set, 32 Articles.)

(7.) Models of Joinery and Cabinet-Ware. (8 Articles.) In our country, the trade of "sashimonoya" (cabinet-maker's) is entirely separate from that of "tateguya" (joiners). Of the present set, the first five models show the methods of constructing the cabinet-ware, *i.e.* of joining pieces of wood in various kinds of dovetails. The remaining three are specimens of the joiner's work; sliding doors, &c. For further models of doors, &c., see No. 33. Tools used by cabinet-makers are taken partly from the carpenters, partly from the joiners, and are not therefore exhibited here.

(8.) Cooper's Tools and Specimens of Cooper's Work. (1 set, 37 Articles.)

(9.) Wood-Turner's Tools and Specimens of Wood-Turning. (1 set, 26 Articles.)

(10.) Wood-Carver's Tools and Specimens of Wood-Carving. (1 set, 22 Articles.)

(11.) Printing-Block Worker's Tools and Specimens of Printing-Block. (1 set, 25 Articles).

(12.) Ivory-Carver's Tools and Specimens of Ivory-Carving. (1 set, 58 Articles.)

There are many kinds of carving, such as metal, stone, wood, bamboo, tusk, horn, and shell carving, but the exhibits from No. 10 downward will give an idea of principal kinds among them. For tools used in metal-engraving, see those for copper-engraving used by the Deaf-Mutes, Class 54, No. 25.

(13.) Plasterer's Tools and Specimen of Plastering. (1 set, 21 Articles.)

The "shiyakuan" or plasterer's business, consists in plastering the walls of houses and fire-proof store-houses (godowns). The specimen given of the plasterer's work is the model of the entrance-door to a fire-proof store-house.

(14.) Stone-Cutter's Tools and Specimens of Stone-Cutting. (1 set, 20 Articles.)

These are the tools used in cutting stone for houses, walls, or monuments, and in finishing stone either smooth or rough. To give a polish, the smoothly-finished surface is rubbed with whetstones which are not exhibited here.

(15.) Mat-Maker's Tools. (1 set, 10 Articles.)

These are the tools for making mats so universally used in our houses. For models of mats see those used in No. 33.

(16.) "Magemono" (Round-Box) Maker's Tools and Specimens of "Magemono." (1 set, 18 Articles.) *Magemono* are round-boxes and other utensils of daily use made by bending wood. (1–4) are materials used in this trade; (5 -17) are the tools, and (18) is a specimen of *Magemono.*

(17.) Tools for Shingle-Roofing and Model of Shingle-Roofs. (1 set, 3 Articles.)

The roofs of temples, palaces and houses in our country are all shingled, either to be left without any further elaboration or to be covered over with tiles. There are several classes of shingle-roofs, according to the quality and mode of arrangement. Another mode of roofing is that of covering with pine-bark (*Thuya obtusa*, Beuth et Hooke). The model given here is that of ordinary first-class shingle-roof.

(18.) Tools and Materials used in making common lacquer and gold lacquer ware. (1 set, 78 Articles.)

Of this set, the first part consisting of tools (1–20), and materials (1–8) relate to common lacquer work. The second part with tools (1–43) and materials (1–6) belongs to gold-lacquer.

(19.) Models illustrating process of making lacquered box. (1 set, 10 Articles.)

This exhibit gives different steps in the manufacture of a lacquer-box beginning with pieces of wood (1), and ending with a finished box (10).

(20.) Illustrations of Different Stages in Preparation of Gold-Lacquer.

This gives six different stages in the preparation of first-class raised gold lacquer.

(21.) Specimens showing process of lacquering sword-cases (scabbards). (1 set, 44 Articles.)

In feudal days, workmen who lacquered sword-cases, formed a class by themselves distinct from ordinary workers in lacquer. But since the abolition of the custom of wearing swords, these handicraftsmen have taken to manufacturing household articles, and their work has acquired the reputation of being very durable and strong. In the present exhibit, are shown the following methods of lacquering sword-cases:—

A. Black-Lacquer Process	(1–15)
B. Hemp-Winding Process	(1–11)
C. Stamping Process	(1–6)
D. Corrugating Process	(1–4)
E. Pear-Ground Process	(1–4)
F. Shell In-laying Process	(1–4)

(22.) Specimens of Lacquered Sword Cases. (1 set, 39 Articles.)

There are about 80 to 100 different ways of lacquering sword-cases. The thirty-nine specimens in the present set will give some idea in regard to the finish of sword-cases.

(23.) Drawing Instruments, *Kaikoshia* (Private School of Architecture) Tokio. (1 set, 7 Articles.)

These instruments are used not only in this school, but universally by Japanese architects.

(24–28.) Reference-Books. (35 works, 51 volumes.)

These are a few specimens of works useful as reference-books in teaching technical arts.

B.—Models, Plans, and Designs for Fitting-up of Workshops and Industrial Schools.

*(29.) Photographs of main building and wood-work Department of Tokio Shokko-Gakko. (Tokio Technical School.)

C.—Results of Work done in Industrial Schools.

*(30–31.) Calendar of Tokio Shokko-Gakko (in English and Japanese).

This gives the constitution, regulations, courses of instruction, &c., of this institution.

(32.) Rules of Kaikoshia (Private School of Architecture), Tokio.

(33.) Model of Daimio's Palace, Scale 1-25. Made by students of *Kaikoshia.*

This model, true to the minutest details, represents the part enclosed within red lines in the next Exhibit (Plan No. 34), and contains the Outer Gate, the Inner Gate, the Public Entrance, and that part of the palace devoted to Reception, Audience, &c., the private apartments not being represented. Such a palace as this model or plan (No. 34) exhibits would be adapted to large and powerful daimios, as Owasri, Kiï, Mito (these three are called the Sankê), Tayasu, Hitotsubashi, Shimidsu (the Sankio), Yetchizen and others with an income of over 350,000 *kokus* of rice. For details, see the explanatory account (in Japanese) attached to the Exhibit.

(34.) Plan of Daimio's Palace. *Kaikoshia.*

(35.) Portfolio of Designs for Ornamental Carving. *Kaikoshia.*

(36.) Portfolio, with methods of using carpenter's square. *Kaikoshia.*

(37.) Portfolio of Diagrams of eaves-construction. *Kaikoshia.*

(38.) Portfolio of Diagrams for finding proportions of different parts of buildings. *Kaikoshia.*

(39.) Portfolio of Drawings of Wood-Construction. *Kaikoshia.*

(40.) Portfolio of Plans and Elevations. *Kaikoshia.*

(41.) Front Elevation of Pagoda. *Kaikoshia.*

Class LIV.

Schools for the Blind and for the Deaf and Dumb.

Although the education of the blind and of the deaf-mute has always been carefully attended to in our country, this has been done mostly in private families. There are at present only three public institutions for these unfortunate members of society, viz. :—the institutions for the blind and the deaf-mute in Kiyoto and Osaka, and the Institute for the Blind in Tokio. Of these, the one in Kiyoto, supported by the city government was the first to be established and is the best equipped. The appliances used there for teaching are well represented in this class, and many of

them will be found to have been devised by the director. In addition to ordinary branches of instruction various handicrafts and the art of shampooing are taught also, so as to enable scholars to earn their own living in after-life.

In our country the better classes among the blind learn music and earn their living by teaching it or by playing at entertainments. The poorer practice shampooing and acupuncture. Among the deaf-mutes the lower classes work as common workmen. It will be seen from the exhibits of the Kiyoto Institution that both the blind and the deaf-mute, when well taught, are fully capable of being made good artisans.

A.—Apparatus and Examples for Teaching.

(1.) SKETCH representing teaching of characters to blind pupils by tracing them on palm of hand or back.

(2.) RAISED AND DEPRESSED CHARACTERS FOR BLIND PUPILS.

(3.) WAX-BOARD for tracing characters for use of Blind Pupils.

(4.) APPARATUS for marking off proper spaces for characters for use of Blind Pupils.

(5.) APPARATUS for tracing characters by puncturing with sharp point.

(6.) WRITING APPARATUS for use of Blind Pupils.

(7.) WRITING APPARATUS for use of Blind Pupils.

(8.) WRITING APPARATUS for use of Blind Pupils.

The above exhibits are used either for the purpose of teaching writing to the blind, or for writing by the blind. As the label accompanying each exhibit, explains the methods of using it, they are not given here. There are some among our educators who think that Chinese characters are too difficult to be taught to the Blind, and that some reforms ought to be carried out in this respect.

(9.) DIAGRAMS representing a Mode of Counting by the Blind.

Each position of fingers relatively to the body represents a number.

(10.) ABACUS for use of the Blind.

The beads are cut across and made flat on one side so as not to be disturbed by accidental touches of fingers.

(11.) CALCULATING BOARD for use of the Blind.

(12.) COMPASS for use of the Blind (in Wooden Case).

(13.) COMPASS for use of the Blind (in Brass Case).

(14.) DIAGRAMS OF VISIBLE SPEECH for Deaf-Mutes.

Although deaf-mutes seldom learn to speak, they often become able to understand what other people say when well taught from this chart.

(15.) DIAGRAMS OF SIGNS for Fifty Sounds of Japanese Syllabary.

(16.) DIAGRAMS OF SIGNS to be traced on Palm of Hand.

(17.) DIAGRAMS OF SIGNS for Fifty Sounds of Japanese Syllabary.

(18.) CHART representing the Blind and the Deaf-Mute at their Lessons.

Various modes of arranging blind and deaf-mute scholars in class-rooms have been originated by the Director of the Kiyoto Institution. Thus sketch No. 1 in the chart represents the mode of arranging blind pupils, and sketch No. 2, that for mute pupils. In the latter, a dull scholar is placed with a bright scholar, thus alternating those of high and low standings, and securing a more uniform progress of a whole class. Sketch No. 3 represents deaf-mute scholars arranged in a semicircle.

(19.) Model of Chair for Shampooing with Figures.

(20.) Model of Bed for Shampooing with Figures.

(21.) Set of Shampooing Apparatus.

As shampooing is still extensively practised by the blind in our country, the art is taught in the Kiyoto Institution where the chair and the bed have however, been used for the first time.

(22.) Illustrations of different stages in teaching blind pupils manufacture of twisted paper ware. Institution for the Blind and the Deaf-Mute, Kiyoto.

This industry consists in making woven goods and household utensils out of different kinds of paper, and is taught in the Kiyoto Institution to both sexes of the blind. The numbers attached to the articles give various steps in teaching it. To state them briefly: (1) Strips of paper are twisted; (2) The result of the first stage is braided together into larger and compound threads; (3) these latter are further braided into household utensils, or (4) they are woven. In (5) are shown diagrams of various apparatus used in the manufacture. The course of instruction comprises three-and-a-half years, and those who have gone through it become competent hands at the trade. For results of work, see Nos. 39–42 in the present class.

*(23.) Illustrations of different stages in teaching deaf-mutes embroidery. Institute for the Blind and the Deaf-mutes, Kiyoto.

The art of embroidering flowers, animals, and other ornamental designs with various coloured threads is taught to mute-girls in the Kiyoto Institution. The steps in teaching are given in the present series: (1) and (2) goldthread embroidery; (3) Oranda-embroidery (*i.e.* Dutch embroidery); (4) Flat-thread embroidery; (5) Sagara embroidery; (6) Yoseïto embroidery; (7) Suga embroidery; (8) Keshi embroidery; (9) is the sketch representing the stand for embroidery and other apparatus. The course of instruction occupies four years, and a fifth is given to practice. For results of work see Nos. 36 and 37 in the present class.

(24.) Illustrations of different stages in teaching deaf-mutes working in wood. Institution for the Blind and the Deaf-mute, Kiyoto.

This series illustrates steps in teaching cabinet-making and working in Chinese and Japanese wood to male deaf-mutes. The numbers attached to the articles themselves give the order of instruction:—*(1) wooden pegs are made; (2) soft, and then hard wood is sawed; (3) and (4) sawed pieces are planed; *(5) and *(6) boxes are made; (7) and (8) hard wood is carved and made into furniture or utensils; *(9) gives sketches of the apparatus used. Instruction extends over three and a half years.

*(25.) Illustrations of different stages in teaching deaf-mutes copper-engraving. Institution for the Blind and the Deaf-mute, Kiyoto.

This series gives stages in teaching male deaf-mutes the art of engraving, and inlaying on, copper; (1) gives some of the tools employed; (2) the support on which the copper piece is fastened to be worked; (3) (4) and (5) are specimens of engraving and in-laying, beginning with simple designs or figures and gradually becoming more and more complicated. The course of instruction covers a period of five years. For results of work see Nos. 43 and 44.

(26.) Sketch representing blind and deaf-mute. Children at play. Institution for the Blind and the Deaf-mutes, Kiyoto.

The games are intended to cultivate the senses of the children, especially that of direction in the blind.

(27.) Raised Wooden "Katakana" Letters, Japanned.

(28.) Raised "Katakana" Letters of Brick.

(29.) Rules of Japanese Language for Use of Blind Pupils. (Raised character on paper.)

(30.) Directions for Elementary School Children for Use of Blind Pupils Raised characters on paper.)

(31.) School-Reader for Use of Blind Pupils. (Raised characters on paper.)

(32.) Set of Apparatus for making Envelopes. For Use of Blind Pupils.

The exhibits from No. 27 to No. 32 are teaching appliances from the Institute for the Blind (private), Tokio. In this school, music and the manufacture of envelopes are taught. For specimens of work see No. 46.

B.—Specimens of School Work.

(33.) Composition and Writing by Blind Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(34.) Compositions and Verses by Blind Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(35.) Drawings by Deaf-mute Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(36.) Piece of Embroidery (Figure of Deer) by Mute Girls. Institution for the Blind and the Deaf-mute, Kiyoto.

(37.) Piece of Embroidery (Figures of Peony and Birds) by Mute Girls. Institution for the Blind and the Deaf-mute, Kiyoto.

In the above two exhibits, the frame and metal-work are by Mute Boys of the Institution.

(38.) Stand for Tea Utensils, by Mute Boys. Institution for the Blind and the Deaf-mute, Kiyoto.

(39.) Bag (Valise), of Woven Twisted Paper Goods, by Blind Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

The metal work is by Mute Boys of the Institution.

(40.) Lunch Basket of Twisted Paper, by Blind Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(41.) Tea-Cup of Twisted Paper, by Blind Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(42.) Water Pitcher of Twisted Paper, by Blind Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(43.) Copper Cake Dish, by Mute Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(44.) Pair of Copper Jars by Mute Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

(45.) Rattan Flower Baskets, by Mute Pupils. Institution for the Blind and the Deaf-mute, Kiyoto.

*(46.) Envelopes made by Pupils of Institute for the Blind, Tokio.

Class LV.

Literature, Statistics and Designs relating to Group 6 and to the Effects of "Cramming" and Overwork on the Young, &c.

In the present class there are brought together the literature and statistics concerning Elementary Schools such as Record-Books of the Elementary School attached to Tokio Normal School, Regulations of the Kindergarten attached to Tokio Female Normal School, and of Elementary Schools in other districts. As English translations are given in many cases, the visitor is referred to them for details.

(1–15.) Specimens of Records, Statistics, and Registers of Elementary School attached to Tokio Normal School. (14 Volumes and 1 Chart.)

(16.) Regulations of Kindergarten attached to Tokio Female Normal School.

(17.) Ditto (in English).

(18.) Examination Questions. Elementary School attached to Tokio Normal School.

(19.) Regulations for Examinations of School Children. Shizuoka Ken (Prefecture).

(20.) Standard Outlines of the Course of Study for Elementary Schools (in English).

(21.) Directions for Teachers of Elementary Schools (in English).

(22.) Regulations of Elementary School attached to Tokio Normal School.

(23.) Ditto (in English).

(24.) Regulations of Girls' Elementary School attached to Tokio Female Normal School.

(25.) Ditto (in English).

(26.) Course of Study for Elementary Schools. Kiyoto Fu (City Government).

(27.) Course of Study for Girls' Elementary Schools. Kumamoto Ken (Prefecture).

(28.) Regulations of Sakurai Female School (private), Tokio.

(29.) Calendar of Sakurai Female School (private), Tokio.

(30.) Regulations of Meirin Female School (private), Tokio.

(31.) Method of Itinerary Instruction. Sappro Ken (Prefecture).

Class LVI.

Collective Displays of School Work and Appliances.

The exhibits brought together in the present class are Educational Code and Regulations, Books and Appliances for higher education, &c., and are calculated to give a general idea of the present state of Education in Japan.

(1.) Code of Education.

(2.) Ditto (in English).

(3.) Notifications issued by Department of Education during years 1881–1884 (10 Volumes).

(4.) General Outlines of Education in Japan (in Japanese and English).

(5.) Ninth Report of Minister of Education (1881).

(6.) Eighth Report of Minister of Education (in English).

All the above exhibits relate to the Educational Code, Regulations and Reports, and the visitor is referred to them for a general aspect of Education in Japan.

(7–19.) Documents relating to Normal Schools (10 Volumes and 3 Charts).

These are Regulations, Records, Statistics, Reports, &c., and will give an idea of the condition of our Normal Schools.

(20–24.) Documents relating to Middle Schools (5 Volumes and 1 Chart).

These are Regulations, Reports, &c., relating to Middle Schools and Higher Schools for Girls.

(25–31.) DOCUMENTS relating to Professional and Special Schools (9 Volumes).

Nos. 25–28 are General Regulations for Medical, Pharmaceutical, Agricultural and Commercial Schools, issued by the Department of Education.

No. 29 is the Calendar of Tokio Gaikoku Gogakko (School of Foreign Languages), for the year 1882–83.

No. 30 is the Regulations of Government Schools for Physical Training. No. 31 is the same in English.

(32–36.) PAMPHLETS AND DOCUMENTS relating to University of Tokio (5 Volumes).

(37–58.) Regulations, Statistics, &c., relating to General Educational Matters (12 Volumes and 10 Charts).

(59.) Papier Maché Anatomical Figure (with Explanatory Notes).

This anatomical figure was made in the Medical Department of the University of Tokio by S. Kitagawa, under the direction of T. Imada, Assistant Professor in that Institution. In many respects it is superior to such figures hitherto made. Half of it can be opened freely and parts like the brain and eye can be taken apart in many different places. For detailed information, see the Explanatory Notes attached to it.

(60.) SPECIMENS OF VEGETABLE POISONS. (1 Case.) These have been prepared from poisonous plants of our country by the Professor of Chemistry and Pharmacy in the Medical Department of the University of Tokio. No. 61 of the present class is the memoir in German on these Poisons.

All the exhibits from No. 61 to No. 85 inclusive are works published by the *University of Tokio.* As English translations accompany many of them, the visitor will be able to gather at once what they treat of.

(61.) Phytochemischen Notizen über einige Japanische Pflanzen. (In German. 1 Volume).

(62.) Shell Mounds of Omori. (1 Volume.)

(63.) Ditto (in English. 1 Volume).

(64.) Reports on the Meteorology of Tokio for 1879–80. (2 Volumes.)

(65.) Ditto (in English. 1 Volume).

(66.) Geology of the Environs of Tokio. (1 Volume.)

(67.) Ditto (in English. 1 Volume).

(68.) Measurements of the Force of Gravity at Tokio and the Summit of Fuji (in English. 1 Volume).

(69.) Chemistry of Saké Brewing. (1 Volume.)

(70.) Ditto (in English. 1 Volume.)

(71.) Wave Lengths of some of the Principal Fraunhofer Lines of the Solar Spectrum (in English. 1 Volume).

(72.) Earthquake Measurements (in English. 1 Volume).

(73.) Measurements of the Force of Gravity at Sappro (in English. 1 Volume).

(74.) Okadaira Shell Mound in Hitachi (in English. 1 Volume).

(75.) Geology of Northern Hitachi (in English. 1 Volume).

(76.) Tables for the Determination of Minerals. (1 Volume.)

(77.) Short Notice of Japanese Minerals. (1 Volume.)

(78.) Handbook of Metallurgy. (1 Volume.)

(79.) Dictionary of Philosophical Terms. (1 Volume.)

(80.) Gakugei Shirin. A Monthly Journal of Science and Art. (1881–4. 7 Volumes).

(81.) Comparative Tables of Japanese, English, and French Weights and Measures. (1 Volume.)

(82.) Catalogue of Plants in Botanical Garden, University of Tokio. 2nd Part. (1 Volume.)

(83.) Table showing Results of Experiments on Japanese Timber.

(84.) Report on Analysis of Drinking Water of Tokio. (1 Volume.)

(85.) Table showing Results of Experiments performed on Japanese Timber, Bricks, and Copper Wires by Students in Engineering (in English. 1 Volume).

The Exhibits from No. 86 to No. 103 inclusive are theses or abstracts of theses presented by Students in Chemistry to the Rector of the University of Tokio, on their graduation. Only those treating of subjects likely to be of interest to foreigners have been placed here.

(86.) On Japanese Pigments, by T. Takamatsu.

(87.) On Shoyu, by T. Isono.

(88.) Chemistry of Copper Smelting in Japan, by T. Nakasawa.

(89.) Japanese Dyeing and Printing (Abstract), by M. Kuhara.

(90.) Japanese Tea and Tobacco (Abstract), by J. Takayama.

(91.) Japanese Starch-giving Materials (Abstract), by S. Ito.

(92.) Japanese Indigo (Abstract), by T. Ishido.

(93.) Soils and Manure (Abstract), by M. Hida.

(94.) Japanese Method of Sugar-Making (Abstract), by K. Ota.

(95.) Japanese Fuels (Abstract), by Y. Kitamura.

(96.) Japanese Tanning Materials (Abstract), by G. Ishikawa.

(97.) Japanese Alloys (Abstract), by I. Hisata.

(98.) Salt Manufacture in Japan (Abstract), by K. Tachibana.

(99.) Japanese Materials for Bottle-Glass (Abstract), by Y. Tokoroya.

(100.) Japanese Camphor Oil (Abstract), by H. Oishi.

(101.) Japanese Materials for Ultramarine and Prussian Blue (Abstract), by K. Iwabuchi.

(102.) Japanese Sea-weeds (Abstract), by T. Kato.

(103.) Banko Wares (Abstract), by T. Uyeda.

The exhibits from Nos. 104 to 125 inclusive relate to Tokio Normal School and Tokio Female Normal School. Both of these institutions have been established by the Department of Education. In the first, two courses are provided, the one fitting teachers for Middle Schools, and the other for Elementary Schools. In addition, a Boys' Elementary School is attached. In Tokio Female Normal School, pupils are fitted to be teachers in girls' elementary schools. To the Schools are appended also Higher School for Girls, Girls' Elementary School, and a Kindergarten. The school exhibits arranged here are apparatus for teaching, text-books published by these schools, and specimens of work of the Normal students and those of the Higher Girls' School.

(104.) Reversible Benches. Tokio Normal School. This seats two persons in front and two persons behind. When occasion requires it, the front seat can be reversed and gradually brought up in front of the persons in the back seat, making desks for those two. This was devised by S. Izawa, formerly Principal of Tokio Normal School.

(105.) Box of Ink-Stone for India-Ink, with Accessories, for use of Students. Tokio Female School.

(106.) Box of Ink-Stone for Red Ink, with Accessories, for use of Teachers. Tokio Female Normal School.

(107–112.) Text-Books and Copy-Books published by Tokio Normal School (6 Works with 18 Volumes).

These have been compiled or translated in Tokio Normal School, and relate to Writing, Arithmetic and History. They are extensively used in other schools.

(113–125.) Specimens of Work done by Students of Tokio Normal School and of Tokio Female Normal School (including Higher School for Girls).

Here are brought together examination papers, maps, compositions and other specimens of work done by the students of the institutions named above. No. 118 is a sketch representing female students attending lessons in making tea, arranging flowers and playing on *Koto* (a musical instrument)—accomplishments taught along with other domestic arts.

The exhibits from Nos. 126 to 133 inclusive relate to the Tokio Educational Museum, established by the Department of Education to promote facilities of education. The Museum contains collections of School Appliances and Apparatus, of Physical and Chemical Instruments, of Animals, Plants and Minerals, besides a well-stocked library of literary, scientific and educational works, and is open daily to the public. To mention one or two spheres of usefulness which the institution has marked out for itself, it undertakes, at the request of schools distant from the capital, to select good and reliable physical and chemical apparatus, and to send them to the desired locality, for the introduction of such apparatus in teaching is of a recent date and schools would be puzzled to know how to choose. Again the Museum makes up and distributes at the lowest prices possible sets of Natural History specimens, as this task involves collecting specimens far and near at various seasons, and cannot be easily undertaken by private individuals.

(126.) Photograph of Tokio Educational Museum.

(127.) Photograph of Grounds of Tokio Educational Museum, with Library Building in View.

(128–133.) Regulations, Catalogues, and Guides. Tokio Educational Museum.

(134–192.) Works published by Department of Education. (59 Works with 196 Volumes.) The Department of Education not only undertakes the publication of elementary text-books as shown in Class 48, Nos. 110–135, but also employs specialists to compile or translate text-books in special branches of higher education or reference-books for the use of the educational profession, as shown in the present series of exhibits. The number of works thus published now amounts to 167 books (with a total of 740 volumes) and 83 maps and charts. These are distributed gratis to public schools, libraries, and museums, and are also sold to private individuals at low prices. Thus the department hopes to develope gradually higher as well as elementary education.

The exhibits from No. 193 to No. 205 inclusive relate to the *Institute of Music* This is a part of the Department of Education established a few years since to make inquiries into musical matters in general, to select and compile songs and their notes for schools, to examine the methods of teaching them, and to undertake the improvements of popular music. To carry out these objects, the Institute has a certain number of students training in various special branches of music, who, it is hoped, will become competent in future to examine into musical matters, and to make improvements in our music. The Institute also sends out teachers to Tokio Normal School and Tokio Female Normal School to teach singing and playing on koto, organ, &c. On this account, not only European but Japanese musical instruments shown in Nos. 203 and 204 are used in the Institute, and differences in various musical scales are investigated. For results of such work, see the charts shown in Nos. 195 and 196; also for the history and constitution of the Institute, see the calendar (No. 194).

(193.) PHOTOGRAPH OF INSTITUTE OF MUSIC.

(194.) CALENDAR of Institute of Music (in English).

(195.) CHARTS showing tuning of classical musical instruments (4 rolls).

(196.) CHARTS showing tuning of popular musical instruments (4 rolls).

(197.) COLLECTION OF SONGS for elementary schools.

(198.) CHARTS OF SONGS for elementary schools.

(199.) STAND FOR CHARTS.

(200.) Mason's National Music Reader (in Japanese).

(201.) Callcott's Grammar of Music (in Japanese).

(202.) Yousses' Catechism of Music (in Japanese).

(203.) CLASSICAL MUSICAL INSTRUMENTS.

These comprise eight instruments: (1) Shō, (2) Hichiriki, (3) Riuteki (a flute), (4) Komabuye (literally, Corean flute), (5) Kagurabuye (literally, flute for sacred music), (6) Wa-gon (literally, Japanese Koto) with Kotoji (bridges) and plectrum, (7) Koto with Kotoji (bridges) and nail-ivories, (8) Biwa with plectrum.

(204.) POPULAR MUSICAL INSTRUMENTS.

These comprise four instruments: (1) Koto with Kotoji (bridges) and nail-ivories, (2) Shiamisen with plectrum, (3) Kokiu (violin) with bow, (4) Shiakuhachi.

(205.) Examination Papers by students of Institute of Music. (5 Volumes.)

日本教育要覽

GENERAL OUTLINES

OF

EDUCATION IN JAPAN.

VOL. XVII.

CONTENTS OF GENERAL OUTLINES OF EDUCATION IN JAPAN.

1. Geography.
2. Territorial Organization.
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GENERAL OUTLINES OF EDUCATION IN JAPAN.

I. GEOGRAPHY.

Japan is situated nearly between 24° (island of Hateruma in Okinawa Ken) and 51° (island of Shimushi in Nemuro Ken) north latitude, and between 123° (island of Yonakuni in Okinawa Ken) and 155° 30′ (island of Shimushi in Nemuro Ken) longitude east of Greenwich. It is surrounded on every side by water; it is washed on the south-east by the Pacific Ocean; on the north-west it is separated from China, Corea, and the Russian possession of Manchuria, by the sea of Japan; on the north from Saghalien by the sea of Yezo; and on the north-east it extends through the Kurile islands to the Russian territory of Kamtchatka. Its length from north to south is 1500 ri, and its breadth is over 60 ri in the widest part, and 30 ri in the narrowest part.

II. TERRITORIAL ORGANIZATION.

The country is divided into 9 circuits, viz; Kinai, Tôkai, Tôzan, Hokuroku, San-in, Sanyô, Nankai, Saikai and Hokkai. The nine circuits are subdivided into 84 provinces which are Yamashiro, Yamato, Kawachi, Idzumi, Settsu, Iga, Ise, Shima, Owari, Mikawa, Tôtômi, Suruga, Kai, Idzu, Sagami, Musashi, Awa, Kazusa, Shimôsa, Hitachi, Ômi, Mino, Hida, Shinano, Kôzuke, Shimotsuke, Iwaki, Iwashiro, Rikuzen, Rikuchû, Mutsu, Uzen, Ugo, Wakasa, Yechizen, Kaga, Noto, Yetchû, Yechigo, Sado, Tanba, Tango, Tajima, Inaba, Hôki, Idzumo, Iwami, Oki, Harima, Mimasaka, Bizen, Bitchû, Bingo, Aki, Suwo, Nagato, Kii, Awaji, Awa, Sanuki, Iyo, Tosa, Chikuzen, Chikugo, Buzen, Bungo, Hizen, Higo, Hûga, Ôsumi, Satsuma,

Iki, Tsushima, Toshima, Shiribeshi, Ishikari, Teshio, Kitami, Iburi, Hidaka, Tokachi, Kushiro, Nemuro, Tishima. Besides there are two islands, viz., Ogasawara and Riukiu.

For the purpose of the administration of all these provinces, there are established the 3 Fu of Tôkiô, Kiôto and Ôsaka, and the 44 Ken of Kanagawa, Hiôgo, Nagasaki, Niigata, Hakodate, Saitama, Gumba, Chiba, Ibaraki, Tochigi, Miye, Aichi, Shidzuoka, Yamanashi, Shiga, Gifu, Nagano, Miyagi, Fukushima, Iwate, Aomori, Yamagata, Akita, Fukui, Ishikawa, Toyama, Tottori, Shimane, Okayama, Hiroshima, Yamaguchi, Wakayama, Tokushima, Yehime, Kôchi, Fukuoka, Ôita, Saga, Kumamoto, Miyazaki, Kagoshima, Okinawa, Sapporo, and Nemuro. Under Fu and Ken, there are Ku and Gun; which are subdivided into wards and villages for the purpose of local administration. Tôkiô is the seat of government, the Imperial Palace being also situated here. According to the census of the 15th year of Meiji, the population of the country is 37,041,368 of which 5,750,946 are school population.

III. POLITICAL ORGANIZATION.

All the administrative affairs of the country are under the control of the Emperor. Under Daijôkwan or Privy Council, there are ten departments, viz., the Departments of Foreign Affairs, Interior, Finance, War, Marine, Education, Agriculture and Commerce, Public Works, Justice, and the Imperial Household, and also the Senate, and the Supreme Court of Judicature. These all form part of the administration of the country. There is a governor in each Fu and Ken, who exercises jurisdiction in accordance with the laws and regulations passed by the government, and in conformity with the directions of the various Ministers. In every Gun or Ku, the subdivision of Fu and Ken, there is a Gunchô or Kuchô, who controls that Gun or Ku under the superintendence of the governor, and in conformity with his directions. In a ward or village, there is a Kochô, who, under the supervision of Gunchô or Kuchô, takes charge of the administrative affairs in his jurisdiction.

In regard to education, there are school committees specially organized in wards or villages to conduct the various matters concerning the school attendance of children, the establishment and maintenance of schools, etc., under the supervision of the governor. They are nominated in each school district (details concerning the division of wards or villages into school districts will be found in the following pages) by the people of that district, and then the governor selects a certain number of those thus nominated. The tenure of office of the school committees is not less than four years, and fixed according to circumstances. Their number, salaries, etc., are determined by the ward or village assembly with the approval of the governor. In case any committee man is incapable of discharging his duty after he has been appointed, the governor causes another nomination to be made.

Persons qualified to serve as members of School Committees, or to take part in the nomination of the same, must be males, upwards of twenty years of age, possessing either lands or buildings, and having both legal and actual residence within their respective school districts. The Kochô takes part in the business of school committees in his own school districts.

When several wards or villages unite together and establish such schools as professional schools, middle schools, etc., independent of the limit of the school districts in which elementary schools are organized, they nominate special school committees within the limit of the school district thus formed. The regulations as to the mode of nomination, appointment, functions, &c., are the same as those adopted in the case of school committees of school districts.

IV. DEPARTMENT OF EDUCATION.

The Department of Education is one of the ten Departments and the Minister of Education has control over all affairs connected with the education of the country, and with respect to these affairs, he superintends the governors of Fu and Ken. There are senior and junior vice-ministers who assist him in the discharge of his duties; secretaries who manage the special

business intrusted to them under the orders of the minister, and subordinate officers who transact the various business assigned to them respectively.

The Minister of Education prepares drafts in regard to the establishment and abolition of such laws and regulations as are connected with education, and submits them to the Emperor for approval. He also signs such laws and regulations, and is responsible for them. When any proceeding of a governor in relation to education is deemed improper, he has the right of nullifying it.

In order to carry on the business of the Department, the following Bureaus are organized within the Department, viz., Bureau of Special School Affairs (to conduct business concerning higher and special education), Bureau of General School Affairs (to conduct business concerning general education), Bureau of Compilation (to conduct the business of writing and compiling books necessary to education), Bureau of Finance (to conduct financial business, constructions, and repairs), Bureau of General Business (to conduct business connected with official regulations for the officers of the several bureaus of the Department, and the schools, &c., under its control, and various business not undertaken by the other bureaus), Bureau of Report (to conduct business concerning the reports, statistics, &c., of education), Office of Private Secretaries (belonging to the private office of the Minister and Vice-Ministers, having charge of business concerning appointment, dismissal, promotion, &c., of officers under the control of the Minister), Documentary Examiners' Office (to examine the drafts of laws and regulations), Office of Prize Affairs (to conduct business connected with the pensions of teachers and rewards concerning education), Institute of Music (to conduct business concerning inquiries as to singing and the improvement of music), Office of Report of the Government Gazette (to conduct the business of collecting and arranging in proper order, the laws, regulations, writings, reports, &c. (necessary to education), which are to be published in "Kuwanpô" the (Government Gazette). The chief of each of these bureaus is a secretary, and in some cases an assistant-chief is also appointed.

The Minister and Vice-Ministers visit, from time to time, the schools of every Fu and Ken, or send officers under them to every place to inspect the actual condition of education. Those officers afterwards present to the Minister reports on the result of their inspection. The governors are bound to present every year a detailed report of education within their jurisdictions; and the schools under the control of the Department are also obliged to present a report on the result of instruction. The Minister then arranges all these reports in proper order, and after making his own remarks, and adding statistics, presents them to the Emperor, as the Annual Reports of the Department of Education. This report is afterwards made public to show the condition of local education.

The Minister of Education has organized an Academy in order to inquire into matters concerning education, and to discuss subjects connected with this science and art. The members of the Academy are at present 21 in all, and are all good scholars of high reputation. The seven original members were chosen by the Minister himself, and the rest have, from time to time, been elected by the vote of the members. The president and vice-president are chosen by the members, their tenure of office being one year. As a rule, they meet once a month, in the Department of Education.

The Directors, Librarians, Curators, Teachers, etc., of the schools, libraries, museums, etc., under the control of the Department of Education are appointed and dismissed in different ways, according to their rank: those of the class of Chokunin are appointed and dismissed by the Emperor himself, those of the class of Sônin by the Prime Minister after the matter has been submitted to the Emperor by the Minister of Education, and those of the class of Hannin by the Minister himself. The following table shows the classes and annual salaries expressed in Yen.

Official titles.	Official ranks.	Amount of Annual Salary.							
		Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.
Rector.	Chokunin.	4,800	4,200	3,600	3,000	..	..	..	..
Deans of Faculties, Directors, Libiarian and Curator.	Sônin.	3,000	2,400	2,100	1,800	1,500	1,200	960	..
Professors.	Chokunin.	4,800	4,200	3,600	3,000	..	..	..	..
	Sônin.	3,600	3,000	2,400	2,100	1,800	1,500	..	..
Assistant-professors.	Sônin.	1,800	1,500	1,200	960	..	..	..	..
	Hannin.	1,200	960	840	720	600	..	..	..
Instructors.	Sônin.	3,000	2,400	2,100	1,800	1,500	1,200	960	..
	Hannin.	1,200	960	840	720	600	..	..	..
Assistant-instructors.	Hannin.	600	540	480	420	360	300	240	..
Teachers.	Hannin.	540	480	420	360	300	240	180	144
Clerks.	Hannin.	The clerks are divided into ten classes from the 1st to the 10th, and the official ranks and salary are the same as those of the clerks of the government Departments.							

The amount of salary, from the professors down to teachers mentioned in the above table, may be more or less reduced, in case the number of hours of instruction be less than that regularly prescribed.

V. HISTORICAL OUTLINES OF EDUCATION.

Owing to the lack of books and writings on the subject, we do not know much about the ancient condition of education in our country, but since the time of Ôjin Tennô who reigned towards 930 of the imperial era (A.D. 270), the successive emperors paid attention to education, encouraged it, and made it one of the

principal government departments. In the reign of the Emperor Mommu (A.D. 673-686), the system of instruction was reformed, a university was established at Kiôto, and schools were also organised in various provinces. In the time of the Emperor Kanmu (A.D. 782-805), education was completely organized and was in a very flourishing condition. During the periods of Hogen (A.D. 1156) and Heichi (A.D. 1159) political power was transferred to the military class, and education then declined; but after Tokugawa Iyeyasu established the military government at Yedo (the present Tôkiô) and engaged learned men and organized government schools, it began to flourish once more. From this time we see schools of Han organized within the dominions of the Feudal Lords, and also within their residences at the three capitals (Yedo, Kiôto, Ôsaka). There were also village, as well as private, schools in wards and villages. No rules being then established by the government, each of those schools followed its own course of instruction, but elementary education was given in every part of the country.

In the first year of Meiji, the political power having been transferred to the Emperor, the Gakushiu-in (a school for nobles) was established in Kiôto. This was the first step towards the improvement of education after the political reform. In the second year of Meiji there was established in Tôkiô the university which had the control of educational matters over the whole country. In the fourth year of Meiji, the university was replaced by the Department of Education which takes charge of the educational system of the country. In the following year, there was promulgated the code of education by which the school districts, and the mode of instruction in the university, middle schools, and elementary schools, were determined. The school age of children was also fixed at from 6 to 13 years of age. At this period a great many schools were established in various parts of the country, and great improvements were made in the mode of instruction. In January of the 8th year of Meiji, the school age of children was altered and fixed at from 6 to 14 years of age. In September of the 12th year of Meiji, the old code of education was abolished, a new code of education

was passed, and many improvements were made in the system of education. In December of the 13th year of Meiji, the code of education was revised, and the sphere of business connected with education, was considerably enlarged. This code is the one now in force.

VI. KINDERGARTENS.

Kindergartens are designed to train children of both sexes under school age, with a view of assisting home education and of laying the foundation of the school education,—moral, physical, and intellectual development being the chief aim of the training. According to the investigations made in the 15th year of Meiji, there are seven kindergartens, including government, public and private establishments. One of them is established in the Tôkiô Female Normal School, and instruction is given by the students of that school. There are also independent kindergartens which are managed by the conductors.

The course of instruction generally comprises assembly, conversations on morals, conversations on various objects, block-laying, paper-plaiting, embroidery, drawing, counting, reading, writing, singing, games, &c., and the length of the course of study is three years. The regulations, &c., of kindergartens are determined according to local conditions, and consequently are not uniform.

VII. ELEMENTARY SCHOOLS.

Elementary schools are those in which general education is given to children and at which attendance is compulsory. According to the computation of the 15th year of Meiji, the total number of elementary schools in the country, including both government, public, and private establishments is 29,081.

An elementary school district may consist of a single ward or village, or of several wards or villages combined, which shall possess adequate resources for establishing and supporting elementary schools. The number of elementary schools to be organized

in one school district is different according to its extent and the convenience of the pupils attending them. Thus, in some school districts, there is only one elementary school, and in others, there are several elementary schools. Again in some, there is one elementary school with several branch schools; in others, there are several elementary schools and several branch schools. In all cases the number is determined by the governor after consideration of the local conditions.

Although elementary schools ought to be established in every ward or village, yet when from the local situation, it is inconvenient for the pupils to attend them, or when the pecuniary condition of a ward or village does not admit of the establishment of a school the pupils may be taught by the system of itinerary instruction.

The course of study in elementary schools is determined by the governor in accordance with the Standard Outline of the Course of Study of Elementary Schools issued by the Minister of Education, modified according to local conditions, and is enforced after the approval of the Minister of Education. It is consequently not uniform.

The elementary school course is divided into three grades, viz., lower, intermediate, and higher grades. The lower grade course comprises the elements of morals, reading, writing, arithmetic; also singing and gymnastics. The intermediate grade course comprises in addition to the continuation of the elements of morals, reading, writing, arithmetic, and singing and gymnastics, the following subjects, viz., the elements of geography, history, drawing, natural history, physics; and especially for the benefit of female students, sewing is provided. The higher grade course comprises, in addition to the continuation of the elements of morals, reading, writing, arithmetic, geography, drawing, natural history, and singing and gymnastics, the following subjects, viz., the elements of chemistry, geometry, physiology, and political economy; while especially for the benefit of female students, domestic economy is substituted for political economy. The length of the course of study is three years in each of the lower and intermediate grades, and two years in

the higher grade; thus the whole length of the three courses extends over eight years.

Although the courses of elementary schools are such as mentioned above, yet some subjects may be added or omitted in accordance with local conditions, the difference of sex, &c.; and in some cases, the elements of agriculture, industry, commerce, &c., may be added. But in no case are morals, reading, writing, or arithmetic to be omitted.

Teachers of elementary schools must be upwards of 18 years of age, and must possess either the certificates of normal schools, or teachers' licenses, or certificates for instruction in a certain subject, given by the governor of Fu or Ken. The certificate of normal schools is valid for seven years from the time of granting it and available throughout the country to obtain the position of a teacher in elementary schools; while the teachers' licenses given by the governor are only valid for a period not exceeding five years, and are only available within the jurisdiction in which they are given.

The teachers' license is given by the governor after examination made as to the knowledge of the candidates, in accordance with the Directions for Granting Teachers' Licenses issued by the Minister of Education, and according to their capacity the license enables them to teach one of the three courses of elementary schools. In any locality where no teacher can be found qualified for any one of those three courses, then those qualified for any one or several subjects may be substituted. Scholars eminent in learning who can teach morals well, or those who have a good knowledge of agriculture, industry, commerce, &c., may obtain teachers' licenses, for the particular subject without examination.

The rank of teachers of elementary schools is determined by the government, as shown in the following table. They are appointed and dismissed by the governor at the request of the committees of the respective school districts; the amount of salary is also determined by the governor, subject to the approval of the Minister of Education. Therefore the amount of salary is not uniform in all Fu and Ken, but it is not more than 40 yen nor less than 5 yen per month.

	Quasi-official rank.
Director	From the 11th to the 13th class.
first teachers	11th class.
second ,,	12th ,,
third ,,	13th ,,
fourth ,,	14th ,,
fifth ,,	15th ,,
sixth ,,	16th ,,
seventh ,,	17th ,,

All children of school age, whether male or female, must attend elementary schools and receive instruction there, except children who are ill; children whose relations are ill, and who have no other persons to attend to them; children who have physical disabilities; children whose families are poor (this last is limited to such cases only when there are no schools established for the accommodation of such children); and children who are receiving the instruction of the elementary course at home.

But those who have some reasons, such as studying some other subjects, or who are engaged in occupations after completing the three years' course of elementary instruction, may be excused specially from attendance at elementary schools.

The business connected with compulsory education is conducted by the school committees under the supervision of the Gunchô or Kuchô. The school committees are bound at the end of every year to examine children of school age in their respective school districts, and if they find any child who does not attend school without good cause, they must compel his parent or guardian to send him to school, or examine into the validity of the excuse, and decide the matter, subject to the approval of the Gunchô or Kuchô.

VIII. MIDDLE SCHOOLS.

Middle schools are organized according to the local conditions of each Fu and Ken and in conformity with the General Regulations of Middle Schools issued by the Minister of Education. Their object is to give higher instruction in the common branches of study so as to prepare students for liberal pursuits or for the more advanced schools. According to the statistical calculations

of the 15th year of Meiji, the number of middle schools was 172 including both public and private institutions. The course of instruction is determined in accordance with the Standard Outline of the Course of Study of Middle Schools issued by the Minister of Education. The course of study is divided into two grades, viz., lower grade and higher grade. The course of the lower grade comprises morals, Japanese and Chinese literature, English language, arithmethic, algebra, geometry, geography, history, physiology, zoology, botany, physics, chemistry, political economy, book-keeping, writing, drawing, singing, and gymnastics. The course of the higher grade comprises, in addition to the continuation of the lower grade course in morals, Japanese and Chinese literature, English language, book-keeping, drawing, singing, and gymnastics, the following subjects, viz., trigonometry, mineralogy, and Japanese law; in this grade, physics and chemistry are also taught.

According to local conditions, a general literary course and a general scientific course may be established in addition to, or instead of, the higher grade course; and also such special branches of study as agriculture, industry, commerce, &c., may be taught. The English language may be omitted, or the German or French language may be substituted for English. The length of the course of study is four years in the lower grade, and two years in the higher grade; the whole course extending over six years. However, the length of the course of study may be lengthened or shortened by any period not exceeding one year.

In order to provide a model for middle schools, the Minister of Education established the Middle School at Ôsaka. The course of study is divided into two grades, viz., lower and higher grades.

The course of the lower grade comprises morals, Japanese and Chinese literature, English language, arithmetic, algebra, geometry, geography, history, physiology, zoology, botany, physics, chemistry, political economy, book-keeping, writing, drawing, singing, and gymnastics. The course of the higher grade comprises in addition to the continuation of morals, Japanese

and Chinese literature, English language, book-keeping, drawing, singing, and gymnastics, the following subjects, viz., trigonometry, mineralogy, and Japanese law; physics and chemistry are also taught. The length of the course of study is four years in the lower grade and two years in the higher grade, the whole course extending over six years.

IX. UNIVERSITY.

There is only one university, called Tôkiô Daigaku, which is under the control of the Department of Education. Its object is to give instruction in the special branches of study; it consists of the four Departments of Law, Science, Medicine, and Literature.

In the Department of Law, a course of study is provided to teach students principally Japanese law; English and French law being added. There is also a special course of instruction which is provided to give students a more simple course of study. The length of this course is three years. But special instruction will be given for one year to those who desire to learn law more fully, after they have completed the three years' course.

In the Department of Science, a course of instruction is provided in mathematics, physics, chemistry, biology, astronomy, engineering, geology; mining, and metallurgy.

In the Department of Medicine, a course of instruction is provided in medicine and pharmacy, and a special course is also provided. The object of the course in medicine is to train students for the degree of Igakushi, and the length of the course of study is five years, but the object of the special course in medicine is to train students as practical physicians, and the length of the course of study is four years. The length of the course of study in pharmacy is three years.

In the Department of Literature, a course of instruction is provided in philosophy, political economy, political science, and Japanese and Chinese literature.

The length of the course of study is four years in each Department, except in that of Medicine.

Attached to the Department of Literature, there is Koten Kôshiu Ka, which is divided into two courses, viz., the Japanese classic course, and the Chinese classic course. In the Japanese classic course, students are taught ancient Japanese laws, ancient and modern history, historical changes of institutions, changes of language, &c., and in the Chinese classic course, they are taught ancient Chinese law, Chinese classics, history, doctrines of several scholars, Chinese literature, &c. The length of the course of study is three years in the Japanese classic course, and four years in the Chinese classic course.

Attached to the University there is Yobimon (Preparatory Department) of the Tôkiô Daigaku which consists of two schools, viz. the principal school which is situated within the Departments of Law, Science, and Literature; and the branch school which is situated within the Department of Medicine. The principal school is intended to prepare students on such subjects as are necessary for entering one of the three Departments of Law, Science, and Literature, and the branch school is intended to prepare students on such subjects as are necessary for entering the Department of Medicine. The length of the course of study is three years in the principal school, and four years in the branch school.

In the Department of Science, there are astronomical and meteorological observatories which are both situated at Motofujichô in Hongô, Tôkiô, at 35° 42′ north latitude and 139° 46′ longitude east of Greenwich. There are also botanical gardens and museums. In the botanical gardens, several thousand species of plants are grown and cultivated; in the museums, originals, specimens, and models, relating to physics, chemistry, and natural history, are arranged.

In the Department of Medicine, there are two hospitals to which sick people are admitted, and in certain cases they are taken care of gratuitously. These are provided to enable the students to gain practical knowledge of their subject.

Besides, there are Rikugun Daigakkô (Military Academy)

under the control of the War Department, and Kobu Daigakkô (Engineering College) under the control of the Department of Public Works. The former is intended to train those persons who desire to become officers of infantry, cavalry, artillery, or engineering, in such a way as to make them fit to discharge the duty of staff officers, in future. The latter is intended to train engineers who will be employed by the Department of Public Works. A course of study is provided in civil engineering, mechanical engineering, ship-building, telegraphy, house-building, practical chemistry, mining, and metallurgy. The length of each course of study is six years of which the first two years (called the preparatory course in which students are prepared for entering one of the special courses) is confined to instruction in the English language, geography, elementary mathematics, elementary mechanics, elementary physics, chemistry, and drawing (geometrical and mechanical), &c.; and the last two years are spent in the practical application of the knowledge already acquired.

X. NORMAL SCHOOLS.

Normal schools, intended to train students as teachers of elementary schools, are to be established in every Fu and Ken according to the General Regulations of Normal Schools issued by the Minister of Education. According to the computation of the 15th year of Meiji, the number of public normal schools is 76, with some branch schools annexed to them.

The regulations as to the course of study is determined according to the Standard Outline of the Course of Study of Normal Schools issued by the Minister of Education. The course of instruction is divided into three grades, viz., lower, intermediate, and higher grades. The lower grade course comprises morals, reading, writing, arithmetic, geography, physics, science of education, school management, practice of teaching, singing, and gymnastics. The intermediate grade course comprises morals, reading, writing, arithmetic, geography, history, drawing, physiology, natural history, physics, chemistry, geometry, book-keeping, science of education, school management,

practice of teaching, singing, and gymnastics. The higher grade course comprises morals, reading, writing, arithmetic, geography, history, drawing, physiology, natural history, physics, chemistry, geometry, algebra, political economy, book-keeping, Japanese law, mental philosophy, science of education, school management, practice of teaching, singing, and gymnastics. The length of the course of study is one year in the lower grade, two and a half years in the intermediate grade, and four years in the higher grade.

But according to local conditions, the course of instruction may be modified, and agriculture, industry, commerce, &c., may be added. Again in female normal schools, Japanese law and political economy may be omitted, or some other subjects may be introduced, and sewing and domestic economy may be added. Thus the course of instruction comprises morals, reading, writing, arithmetic, geography, Japanese history, drawing, natural history, physics, sewing, domestic economy, etiquette, science of teaching, singing and gymnastics.

In some Fu and Ken, teachers' institutes are organized for the purpose of improving the teachers of elementary schools, and in others, supervising teachers are appointed to superintend the mode of instruction in elementary schools, &c. The regulations and mode of carrying out these plans must be submitted for the approval of the Minister of Education.

Attached to each normal school, there is an elementary school which is provided to enable the normal school students to gain practical experience in teaching, and which also serves as a model for elementary schools.

In order to provide a model for normal schools, the Department of Education established two schools in Tôkiô; one of which is for the instruction of male students and is called the Tokio Normal School, and the other is for the instruction of female students, and is called the Tôkiô Female Normal School.

The object of Tôkiô Normal School is to train students as teachers of the whole course of elementary schools, middle schools, normal schools, &c.; therefore they are taught the elementary normal school course, and the middle normal school course.

The elementary normal school course comprises morals, reading, writing, arithmetic, geography, history, drawing, physiology, natural history, physics, chemistry, geometry, algebra, political economy, book-keeping, agriculture, industry, commerce, Japanese law, mental philosophy, science of education, school management, practice of teaching, singing, and gymnastics. The length of the course of study is four years.

The middle normal school course is divided into two grades, viz., lower and higher grades. The lower grade course comprises morals, Japanese and Chinese literature, English language, algebra, geometry, physical geography, physiology, zoology, botany, mineralogy, physics, chemistry, political economy, history, drawing, mental philosophy, science of education, practice of teaching; singing, and gymnastics. The length of the course of study is four years. The higher grade of course is not yet in operation.

Attached to this normal school, there is an elementary school which is provided for normal students to gain practical experience in teaching, and which also serves as a model for elementary schools for boys. The course of instruction, and the length of the course of study, do not differ very much from those stated in the Standard Outline of the Course of Study of Elementary Schools issued by the Minister of Education.

In Tôkiô Female Normal School instruction is given in the elementary normal school course for girls with the object of training students as teachers of the whole course of elementary schools for girls. The course of instruction comprises morals reading, composition, writing, arithmetic, geography, Japanese history, drawing, natural history, physics, chemistry, science of education, practice of teaching, sewing, etiquette, domestic economy, singing, and gymnastics. The length of the course of study is four years.

Attached to this school, there is a higher female school, in which higher instruction is given in the common branches of study with the object of developing the various female virtues. The course of instruction is divided into the lower and higher grades. The lower grade course comprises morals, reading,

composition, writing, arithmetic, geography, Japanese history, natural history, physics, drawing, sewing, etiquette, singing, and gymnastics. The higher grade course comprises, in addition to the continuation of the lower grade course in morals, reading, composition, writing, drawing, sewing, etiquette, singing, and gymnastics, the following subjects, viz., chemistry and domestic economy. The length of the course of study is three years in the lower grade, and two years in the higher grade.

Attached to the Female Normal School, there is also an elementary school for girls which is provided to enable female normal students to gain practical experience in teaching, and which also serves as a model for elementary schools for girls. The course of instruction is divided into the lower and higher grades. The lower grade course comprises the elements of morals, reading, composition, writing, arithmetic, drawing, sewing: also singing and gymnastics. The higher grade course comprises, in addition to the continuation of the lower grade course in the elements of morals, reading, composition, writing, arithmetic, drawing, sewing, also singing and gymnastics, the following subjects, viz., the elements of geography, Japanese history, natural history, physics, and etiquette. The length of each course of study is three years.

Again there is a kindergarten annexed to the Female Normal School, to which children of both sexes under school age, but upwards of three years old, are admitted. Instruction is given with the object of cultivating their moral nature, developing their physical constitutions, and improving their intellectual faculties. The course of training comprises assembly, conversation on morals, conversation on various things, plank-laying, stick-laying, ring-laying, peas work, bead-joining, paper-plaiting, paper-folding, paper-perforating, embroidery, paper-cutting, drawing, counting, reading, writing, singing, and games. The length of the course is three years. This is provided to enable the female normal students to gain practical experience in teaching, and it also serves as a model for other kindergartens.

A certificate is given by the school to every student who completes the course of study in the Normal Schools. Thus the

students who complete the higher grade course are qualified as teachers of any elementary school course; those who complete the intermediate grade course, as teachers of the intermediate and lower grade courses of elementary schools; and those who complete the lower grade course as teachers of the lower grade course of elementary schools. The certificate is valid for seven years. When there is manifest evidence as to deep knowledge, thorough experience in the ways of teaching, and good conduct, a new certificate available for seven years or for life may be given without examination, even after the expiration of seven years.

XI. PROFESSIONAL SCHOOLS.

Professional Schools are organized according to the local conditions of Fu and Ken. There are already several professional schools in different localities. According to the computation of the 15th year of Meiji, there are 34 public schools and 36 private schools of this kind. Thus there are schools of medicine, pharmacy, law, science, literature, drawing, navigation, mathematics, architecture, porcelain, &c., of which the schools of medicine are most numerous.

The regulations as to the course of instruction in the schools of medicine and pharmacy are determined according to the General Regulations of the Medical and Pharmaceutical Schools issued by the Minister of Education. Therefore in the school of medicine, the length of the course of study is four years for physicians who pursue the regular course of study, and three years for those who desire to complete their study in a short time. The school of pharmacy is at present within the school of medicine, and the length of the course of study is over three years for pharmaceutists who pursue the regular course of study and two years for those who desire to complete their study in an easy course.

There are two professional schools established by the Department of Education. One is called the Tôkiô Foreign Language School, and the other, the Gymnastic Institution.

In the Tôkiô Foreign Language School, the French, German

Russian, Chinese and Corean languages are taught (instruction in the English language is included in the course of the Chinese language). The length of each course of study is five years, of which three years are occupied in the lower grade course, and two years in the higher grade course.

Within this school, it is intended to provide a commercial school, in which higher instruction will be given in the commercial course, with the object of training students as teachers of that course, as well as preparing them to engage in commerce and to improve its condition. It is also intended to serve as a model for commercial schools. But as it is not yet in operation, the course of instruction will not be mentioned here.

The Gymnastic Institution is organized for the purpose of training students in the art of gymnastics. Instruction is given according to the three following divisions, viz.: 1. Teachers of normal schools of Fu and Ken and other schools who intend to become teachers of gymnastics are instructed in gymnastics (light exercise, out-door exercise, heavy exercise, rowing, manœuvres of infantry) physical education, and physiology; the length of the course of study is about six months. 2. The students and scholars of all the schools in Tôkiô under the control of the Department of Education are instructed in the same kind of gymnastics as mentioned above. 3. Teachers of schools, &c., who learn gymnastics during their leisure hours, are instructed only in light exercise, out-door exercise, and heavy exercise.

There are also several schools organized by other departments. They are established for the purpose of giving instruction in various technical subjects. They are under the control of their respective departments. Thus in the War Department, there are Shikan Gakkô (school of military officers), Toyama Gokkô (Normal School for the officers of infantry, &c.; it is so called because it is situated at Toyama, Ushigome Ku, Tôkiô), and Rikugun Kiôdôdan (Normal School for subordinate military officers), in all of which instruction is given in military affairs concerning infantry, cavalry, artillery, and engineering, to train students as military officers.

In the Marine Department, there are Kaigun Heigakkô (naval school) in which instruction is given in artillery, navigation, and seamanship, and Kaigun Kikangakkô (school of marine engineers) in which students are instructed in the science of the steam-engine.

In the Department of Agriculture and Commerce, there are Sanrin Gakkô (school of forestry) in which students are taught the science of forestry, and Shôsen Gakkô (nautical school) in which instruction is given in the art of navigation. In the Department of Public Works, there is Denshinkioku Shiûgikô (telegraph school, attached to the telegraphic bureau) in which students are taught electricity, telegraphy, and the English and French languages. In the Department of Justice, there is Hôgakkô (law school) in which students are taught law.

XII. AGRICULTURAL SCHOOLS.

Agricultural Schools are organized according to the local conditions of Fu and Ken, in conformity with the General Regulations of the Agricultural Schools, issued by the Minister of Education. According to the computation of the 15th year of Meiji, there are ten schools including both public and private institutions, in all of which students are taught such subjects as are necessary for agriculture. The course of instruction and the length of the course are determined according to local conditions, and consequently are not uniform. There are also institutions called agricultural institutes, &c., in which students are chiefly taught practical business and also a simple course of study.

There are two schools established by the Department of Agriculture and Commerce. One of them is called the Agricultural School of Komaba (so named, because it is situated at Komaba, Gun of Ibara, Tôkiô-Fu) in which students are instructed in the science of agriculture, in veterinary science, and agricultural chemistry. The other is called the Agricultural School of Sapporo (so named, because it is at Sapporo under the

Ken of the same name) in which students are taught the cultivation of land and stock rearing.

XIII. COMMERCIAL SCHOOLS.

Commercial Schools are organized according to the local conditions of Fu and Ken, in conformity with the General Regulations of Commercial Schools issued by the Minister of Education. According to the computation of the 15th year of Meiji, there are four public schools and two private schools, in all of which students are taught in such subjects as are necessary for commerce. The course of instruction and the length of the course of study are determined according to local conditions, and are consequently not uniform. There are institutions called business schools, &c., in which students are taught chiefly the practical business of commerce and also a simple course of study.

XIV. INDUSTRIAL SCHOOLS.

Industrial Schools are also to be established according to the local conditions of Fu and Ken. There is as yet no public or private school of this kind, and students therefore learn practical business at the industrial factories.

There is one industrial School established by the Department of Education. It is called the Tôkiô Industrial School. Its object is to train students as teachers of industrial schools, or as foremen of labourers or directors of factories. The course of instruction is divided into two classes, viz., chemical technology and mechanical technology. The length of each course of study is three years. There is also a preparatory course, in which students are taught mathematics, physics, chemistry, drawing, and morals, to prepare them for the higher course. The length of the course of study is one year.

XV. HIGHER FEMALE SCHOOLS.

Higher Female Schools are organized according to the local conditions of Fu and Ken. The object of these schools is to

give to girls who have completed the elementary school course such higher instruction in the common branches of study as is suitable for them, and thus to train them as women of virtue. According to the computation of the 15th year of Meiji, there are five such public schools. The course of instruction comprises morals, composition, writing, arithmetic, geography, Japanese history, natural history, physics, chemistry, drawing, sewing, domestic economy, etiquette, music, and gymnastics, and at the same time, the mode of kindergarten training is taught. The length of the course of study in these schools is not to exceed five years, but is not uniform.

XVI. MISCELLANEOUS SCHOOLS.

A great number of miscellaneous schools are organized in different localities. Thus there are Japanese schools (teaching history, law, literature, and the poetry of Japan), Chinese schools (teaching morals, politics, history, literature, and reading Chinese books), English schools (teaching English language, and reading English books), French schools (teaching French language and reading French books), German schools (teaching German language and reading German books), school for the Blind and Dumb, schools of book-keeping, schools of handi-work for females, schools of arithmetic (teaching arithmetic only), schools of writing (teaching rules of writing, handling pens, &c.), &c., of which the Chinese schools are most numerous; the reading schools stand next, and then come schools of handi-work, writing and arithmetic. According to the computation of the 15th year of Meiji, the number of public schools is 88 and that of private schools is 1131. The length of the course of study is different according to the organization of the schools.

The ranks and salaries of the directors, teachers, &c., of the several schools organized by the various Departments other than that of Education are determined by the Ministers of the respective Departments, and are therefore different one from another.

The ranks and salaries of the directors and teachers of public schools are determined, subject to the approval of the Minister of Education, by the governor of Fu or Ken; thus,—those of normal and middle schools, in conformity with the accompanying table promulgated by the government; and those of all other public schools (except elementary schools) according to the respective standing of such schools. The salaries of the directors and teachers of schools established by Fu and Ken are determined by the governors with the approval of the Minister of Education, and those of schools established by wards or villages are determined by the school committees with the approval of the governors.

Normal and Middle Schools.	Quasi-official ranks.
Director.	From the 8th to the 10th rank.
1st Instructors.	8th rank.
2nd Instructors.	9th „
3rd Instructors.	10th „
1st Assistant-instructors.	11th „
2nd Assistant-instructors.	12th „
3rd Assistant-instructors.	13th „

The titles and the quasi-official ranks for those employed in professional schools, agricultural schools, commercial schools, industrial schools, etc., are established in conformity with normal schools, middle schools, or elementary schools, according to their respective standing.

XVII. TEXT-BOOKS.

In all cases school text-books are chosen with great care; but with respect to those books especially concerning general education, the Department of Education takes the responsibility of examining them and ascertaining whether they are fit for text-books or not, and from time to time informs the governors of the result of the examination, which will assist them in choosing text-books. Also with respect to those books concerning morals, the Department of Education indicates the general principles of compiling them, and requires special attention in publishing them.

The books examined from the 13th year to the 16th year of Meiji are 684 copies or 1668 volumes, of which 462 copies or 1054 volumes are those to be used in elementary schools and 222 copies or 614 volumes are those to be used in middle and normal schools.

Again the Department of Education compiles and publishes text-books to serve as models for authors. In order to improve the books used in the schools, it is intended to make regulations as to the examination of such books and to examine them in a more precise manner.

XVIII. LIBRARIES AND EDUCATIONAL MUSEUMS.

Libraries and Educational Museums are also organized in different localities. There are 19 libraries which are said to be in good organization. There are also several reading-rooms which are provided within the schools, &c., for the use of teachers and students. They are also opened to the public. The object of educational museums is to arrange in order objects concerning education, and to provide them for reference by educators. There are four museums which are worthy of notice; but all others are small rooms of schools in which apparatus for chemistry and physics, and specimens of natural history, &c., which are used in instruction, are provided. They are also shown to the public.

There are two establishments organized by the Department of Education. They are the Tôkiô Library and the Tôkiô Educational Museum.

In the Tôkiô Library, all books useful for study without distinction as to whether they are Japanese, Chinese, European, or American, are collected and shown to the public. Those who write or translate or compile books necessary to education are allowed to take any book out of the Library by special permission granted by the Minister of Education.

In the Tôkiô Educational Museum, objects necessary to general education are collected for the benefit of persons engaged in

education and they are also shown to the public. The objects arranged therein are all instruments and apparatus used in schools, specimens, models of natural history, text-books, reference books for educators, &c. This establishment also provides specimens of animals, plants, and minerals, and models of educational instruments, &c., and supplies them at cheap prices to schools in different places. It also encourages the makers of apparatus to construct several kinds of apparatus used in chemistry and physics, and introduces them to schools in different localities which desire to buy them. The progress of education is ensured in this way.

The regulations and rules as to the course of instruction of every school above stated, kindergartens, libraries, and educational museums which are organized by the Departments are determined respectively by the Ministers of those Departments. But any thing which is very important is subject to the approval of the Prime Minister. The regulations and rules of schools organized by Fu and Ken are determined by the governors, subject to the approval of the Minister of Education, and those of schools established by wards or villages are determined by the school committees subject to the approval of the governors. Those of private schools established by one or several persons are determined by the person or persons who organized them, but are subject to the approval of the governors.

XIX. STUDENTS SENT ABROAD.

Many hundreds of students have at different times been sent abroad, some of them after having completed their course of study in the schools established by the several Departments, or by Fu and Ken; others were sent by the former feudal lords. Since the 8th year of Meiji fifty students have been sent abroad by the Department of Education, of whom twenty-four have already returned having finished their study, and four came back on account of illness, without completing their study. Some students received diplomas at the universities abroad, and others received rewards on account of successful examinations.

The number of students in Europe is at present twenty-two, of whom seventeen are in Germany, one in Austria, two in England, one in France, and one in America. All of them are graduates of Tôkiô Daigaku who were specially selected by the Minister of Education to pursue their studies more thoroughly.

XX. EDUCATIONAL CONVENTIONS.

In certain cases an educational convention is held for the purpose of inquiring into and investigating educational matters. Thus the Minister of Education on certain occasions calls together the heads of educational sections (officers under the governor) of Fu and Ken, and the directors of schools established by Fu and Ken, &c., and inquires into the condition of education in their respective localities, or points out to them general principles of education. The governors also hold in some cases a conference of officers in charge of education, the directors and teachers of schools, &c., under their jurisdiction, who discuss questions concerning education. Sometimes a united conference of several Fu and Ken is held for the same purpose. Again in different places, assemblies of officers of wards or villages, school committees, directors and teachers of schools, &c., are frequently held to consider the business of education or to consult about school management, the mode of instruction, &c.

XXI. ENCOURAGEMENT OF EDUCATION.

For the encouragement of local education, the Minister of Education gives books and instruments to officers engaged in education who have performed special services, to students or pupils of both public and private schools who have been specially deserving, and to both public and private schools, kindergartens, libraries, educational museums, &c., which are considered to be of special benefit to the public. In different places, rewards are given, at the time of examination, to students who pass the examination successfully.

XXII. EDUCATIONAL FUNDS.

The funds of the schools, &c., established by the different Departments are supplied from the national exchequer and consequently out of the appropriation money of the respective Departments. The funds of schools, &c., established by Fu and Ken are supplied from the local taxes paid by the people of the respective Fu and Ken. In some cases the money contributed, and the fees of instruction are added to the local tax to make up the fund, or sometimes a part of it is supplied from the national exchequer. The funds of schools, &c., established by wards or villages are supplied from the public funds of wards or villages. Also sums of money contributed, and the fees of instruction or money realized from school land are added to the fund. Private schools are maintained by the fees of instruction or by the private money of one or several persons.

XXIII. SCHOOL LANDS.

The grounds occupied by schools, &c., which are organized by the different Departments are in every case government lands. The grounds occupied by schools, &c., established by Fu or Ken are also in most cases government lands; but in a few cases, land jointly owned by the people is added to the government land. The grounds occupied by schools, &c., organized by the wards or villages are jointly owned by the people or are sometimes the property of private individuals.

When wards or villages establish at the public expense any school, such as elementary schools, middle schools, professional schools, agricultural schools, commercial schools, industrial schools, government land not in use, if there is any in such place, is granted on the request of the people of that locality without any payment, in the following proportion, viz., 500 tsubo (one tsubo is about 36 square feet) for each elementary school and 1000 tsubo for any other school. The land actually occupied by the schools is exempted from taxation. Again the land possessed by all public agricultural schools and provided

for practical or experimental use is exempted from taxation in the proportion of five chô (3000 tsubo) per school, and when government land is required to provide farms for practical or experimental use, land not exceeding five chô is granted for such use without any payment of rent.

According to the computation of the 15th year of Meiji, the land exempted from taxation is about 2,460,865.49 tsubo.

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