

**Report upon the sanitary conditions of the public elementary schools of
Blackburn / by Alfred Greenwood.**

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COUNTY BOROUGH OF BLACKBURN.

REPORT

UPON THE

SANITARY CONDITIONS OF THE
PUBLIC ELEMENTARY SCHOOLS OF
BLACKBURN

BY

ALFRED GREENWOOD, M.D., D.P.H., &c.

MEDICAL OFFICER OF HEALTH,

MEDICAL SUPERINTENDENT TO THE FEVER AND SMALLPOX HOSPITALS,

AND MEDICAL OFFICER TO THE EDUCATION COMMITTEE.

Blackburn :

NORTH-EAST LANCASHIRE PRESS CO., 41 CHURCH-STREET.

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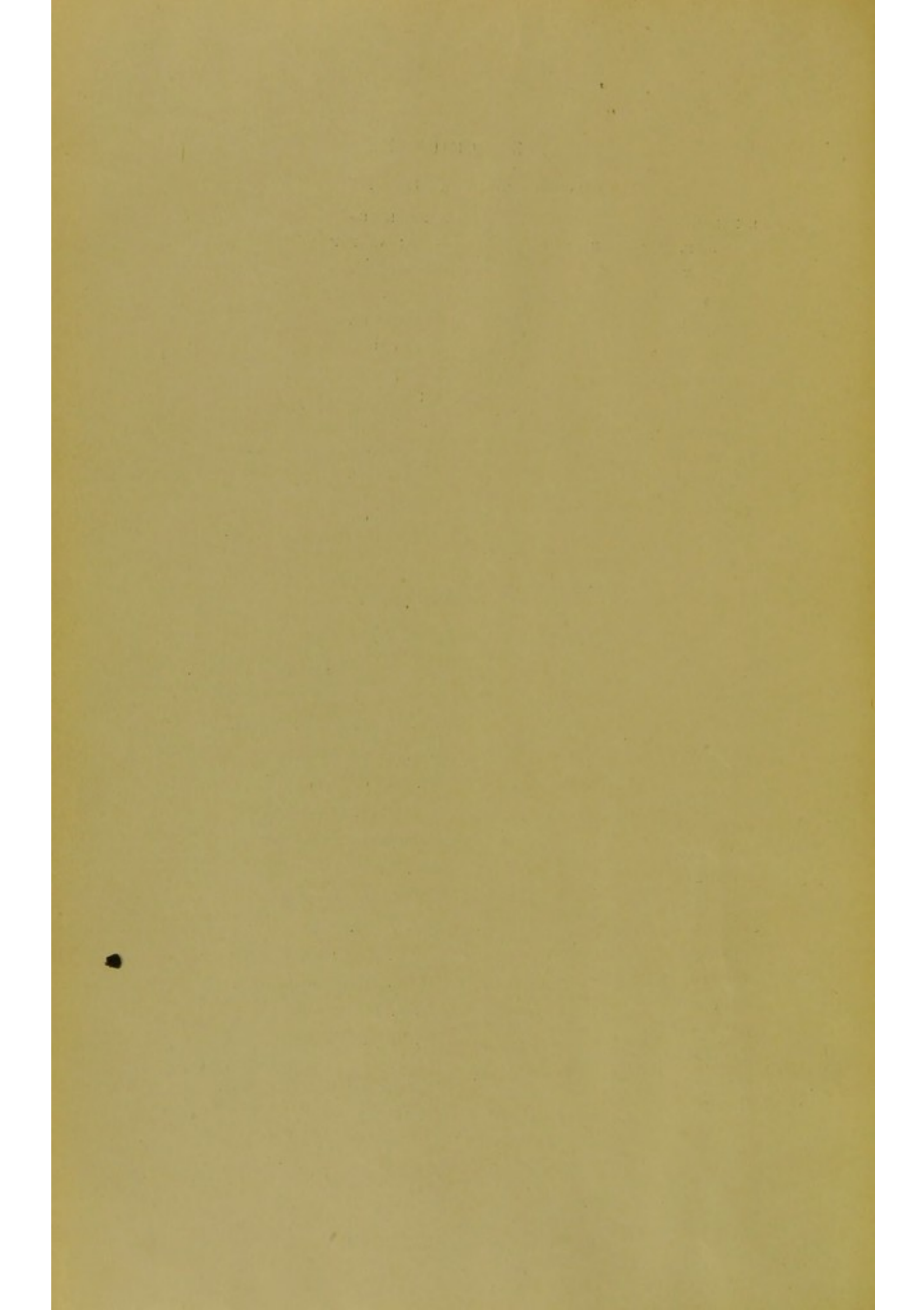
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PUBLIC HEALTH OFFICE,

51 AINSWORTH STREET, BLACKBURN,

18TH FEBRUARY, 1904.

*To the Members of the Health and Education Committees of the
County Borough of Blackburn.*

LADIES AND GENTLEMEN,—

Acting upon your instructions, as Medical Officer of Health and as Medical Officer to the Education Authority, I have made a complete investigation into the sanitary conditions of the 52 Public Elementary Schools of Blackburn, and I now present for your consideration my report dealing with this subject.

The material of the report has been divided into five chapters. Chapter I. contains references to the Rules issued by the Board of Education in the planning and fitting-up of Public Elementary Schools, together with my own remarks thereon.

Chapter II. contains an account of the sanitary conditions at each school, dealt with seriatim. In describing each school I have adopted the following plan:—Firstly, a brief description has been given dealing with the *external* conditions, such as: condition of buildings, playgrounds, sanitary conveniences, etc. Then measurements and observations have been recorded of the *internal* conditions as to heating, natural and artificial lighting, cloak-room accommodation, walls, floors, etc. Each room has been dealt with separately in respect to floor space, cubic space, ventilation (inlets and outlets), and lighting per scholar. The special conclusions and recommendations for each school follow next, and a plan drawn to scale showing the arrangement of the rooms completes the description of the school.

Chapter III. contains the results of a chemical examination of the air of schools for Carbon Dioxide gas, together with an account of the various conditions under which the samples were collected.

In this connection I have examined 107 samples of school air for the quantity of Carbon Dioxide gas. In addition, also, Dr. Pickard has analysed one sample of air from each school (52 samples), so that I could compare my own results with those of an expert chemist. These comparisons were very satisfactory. An analysis was made of the outside air each day.

In Chapter IV. I have given the results of my bacteriological examination of the air of schools, and in Chapter V. I have made certain general recommendations which are applicable to all the schools, and which should be considered as additional recommendations to those specially made for each school. This has been done so as to avoid repetition. Where it is not possible to carry out all the improvements at once I would suggest that the more important be dealt with first.

I wish to place on record my appreciation of the courtesy of Mr. Stubbs, the Borough Engineer, for preparing plans on a reduced scale of all the schools. These add materially to the value of this report, as there has not been in existence previously a complete set of plans of the schools of Blackburn. I would express my appreciation of the very efficient manner in which Inspector Holden has carried out my instructions in making certain measurements and inquiries, and of the willingness of the Head-Teachers for giving me any information which I desired. I am also indebted to my Chief Clerk, Mr. Fowler, for his willing assistance in correcting the proofs.

The greatest care has been taken to render all figures accurate, and I have checked every measurement myself.

I am, Ladies and Gentlemen,

Your obedient Servant,

ALFRED GREENWOOD.

CHAPTER I

In order to indicate what has been considered desirable by the Board of Education, I will first refer to the rules, which they have issued, to be observed in planning and fitting-up Public Elementary Schools. It will be noted that these rules apply to new school buildings, and that it is practically impossible to make all old schools comply with those regulations in every respect. It is, of course, known by everyone that many schools built 50 years ago would be planned differently to-day. I will then give the results of my examination of the schools seriatim, together with my remarks thereon.

Thus it will be possible to compare the conditions found in Blackburn schools with the standards laid down by the Board of Education for new schools.

In the prefatory note to the above-mentioned rules it is stated that they are intended to show Education Authorities, School Managers, and their Architects, what the Board deem essential in the construction and design of school buildings, but in other respects they are not meant to restrict liberty of treatment. I would here say that, in my opinion, certain of the above-mentioned rules of the Board of Education might with advantage have been made more stringent, especially with regard to the sizes of the permanent outlet and inlet ventilation openings, and the floor area per head respectively.

Certain standards have been adopted in America, which are more satisfactory. They are the results of investigations and repeated experiments, in which lighting, heating, ventilation, eyesight, hearing, and other physical requirements have been considered. The standards require 15 square feet of floor space, and 200 cubic feet of air space per child as minimum measurements. Also they require that the size of the schoolroom should be 30 feet in length, 25 feet in width, and 13 feet in height, to accommodate not more than 48 pupils.

Every part of a school building should be thoroughly adapted to the work of school-teaching. Such a building must, therefore, be provided with an ample playground, must be of sufficiently solid construction, suitably lighted and warmed, and thoroughly ventilated,

without draughts. It must have a sufficient number of entrances, and adequate cloak-room accommodation, and scrupulous care must be devoted to sanitary arrangements.

The other Rules are calculated to produce buildings which shall be compact, properly sub-divided for class-teaching, conveniently arranged for effective supervision by the principal teacher, and for the movement of the children from the entrances to the class-rooms or from one class-room to another.

No school should be built to accommodate more than 1,000 to 1,200 children, in three departments, which may be divided as follows:—Boys, 360; Girls, 360; Infants, 380.

For departments of this size the most suitable plan is that of a central hall, with the class-rooms grouped round it; as a rule such a department would probably require seven class-rooms. Smaller departments may be planned conveniently with the class-rooms, opening from a corridor. For small schools a large room with one or more class-rooms will be sufficient. As a rule there should be at least one class-room.

Where the site is sufficiently large, open, and fairly level, the most economical plan is that of a school on a single floor. This arrangement is also preferable on educational grounds. In any case a school building should not be on more than two floors.

The accommodation of every room depends upon its area, lighting, shape, position of doors and fireplaces.

The Board of Education state that a school-room should never be designed for more than 100 children, and that a class-room should not be planned to accommodate more than from 50 to 60 children. The minimum size is 18 feet by 15 feet. This would give floor space for 27 scholars, and the cubic capacity, if 12 feet high, would be 120 cubic feet per head. In the absence of supplementary light, the measurement from the window-wall in a room 14 feet high, should not exceed 24 feet 8 inches. A long and narrow class-room should always be avoided, and a room approximating to a square is most satisfactory.

In planning a school it is necessary at first to consider three important points:—

- I. The number of scholars of each sex.
- II. The number of rooms needed for various subjects for scholars of various ages.
- III. Proper and efficient lighting.

Heating, ventilation, etc., must be provided for also, but if the above three points are not taken into consideration at the outset, re-building may be necessary.

ACCOMMODATION.

The English Day School Code prescribes a minimum of ten square feet of floor space per child, and nine square feet of floor space for each infant in infant class-rooms.

Schoolrooms should be at least 12 feet high; if the superficial area is more than 360 square feet, they should be 13 feet high, and if more than 600 square feet, 14 feet high. Therefore if the room is 20ft. x 15ft. x 12ft. high, the floor space is 300 square feet (*i.e.*, equal to 30 scholars), and the cubic capacity is 3,600 cubic feet. Hence the 30 scholars would have in that room a cubic capacity of 120 cubic feet per head. In a room 40ft. x 30ft. the English Code would allow 120 children.

ROOFS, ENTRANCES AND STAIRCASES.

The roofs should be rendered impervious to cold and heat. Roofs open to the apex are very undesirable. They can only be permitted where the roofs are specially impervious to heat and cold, and where apex-ventilation is provided.

The external walls of the school must be solid. The thickness of brick should be at least one brick and a half; and if of stone at least 20 inches.

All walls should have a damp-proof course just above the ground line.

Entrances should be separate for each department and each sex. A porch should be external to the schoolroom. Entrance-doors should open both outwards and inwards.

There must be separate staircases for each sex and each department.

Every staircase must be fire-proof, and external to the halls, corridors, or rooms. Triangular steps, or "winders" must not be used. Each step must be about 13 inches broad, and not more than 5½ to 6 inches high. The flights must be short, and the landings unbroken by steps. The number of staircases must be sufficient not only for daily use, but also for rapid exit in case of fire or panic. For any upper floor accommodating more than 250 a second staircase is essential.

CLOAK-ROOMS AND LAVATORIES.

Cloak-rooms should not be passages, and should be external to the schoolrooms and class-rooms, with gangways at least 4ft. wide between the hanging-rails, and amply lighted from the end. They should not be placed against the gable wall. Also, it is desirable that the pegs should be arranged in such a way that the air can circulate freely round the clothes as they hang. The hanging-rail should be arranged so that the children can enter and leave the cloak-room without confusion or crowding. Hat-pegs should be 12 inches apart, numbered, and of two tiers.

Thorough ventilation of the cloak-room is essential, so that smells are not carried into the school. All cloak-rooms should be heated. Ample space is needed immediately outside a cloak-room. Lavatory basins are needed. Girls require more than boys. Waste pipes from sinks or lavatories should be first trapped inside, and then made to discharge direct through an outer wall over a trapped gully.

LIGHTING.

Every part and corner of a school should be efficiently and properly lighted. When possible, the maximum lighting should be from the left of the scholar, and a smaller amount from behind. In this way there is no shadow upon the book when reading, and when writing the shadow of the hand and pen are on the right of the pen.

If this cannot be arranged, the next best form of lighting is for the light to come from the right and from behind.

The light should never come from behind alone, or from the front of the child.

If the light comes from behind alone, the book and slate are in the shade, owing to the child's body excluding the direct light. If the light is admitted from the front its full force comes into the child's face and on his book, making reading and writing very difficult.

The windows of a school are very important. In my opinion, the glass area should be from one-fourth to one-sixth of the floor area. The window-sills should be four feet above the floor, and the tops of the windows should reach to within six or twelve inches of the ceiling. Large spaces between the window-head and ceiling cause foul rooms. Also the higher the window is placed to the ceiling, the greater will be the illumination and the diffusion of light. Nothing in the way

of ornamentation should be allowed to interfere with the lighting, and the angles of the walls near the windows should be rounded off, or cut away. The object of efficient lighting by daylight in a school should be to obtain the maximum benefit of illumination from every portion of the glass. All kinds of glazing which diminish the light and are troublesome to keep clean and in repair, must be avoided. Skylights are objectionable. A large part of each window should be made to open, and this point will be considered under the heading of "Ventilation." This will also facilitate cleaning.

In the Rules for planning Public Elementary Schools, issued by the Board of Education, it is stated that in rooms 14ft. high, any space beyond 24ft. from the window-wall is insufficiently lighted.

The colouring of the walls and ceilings, and of all fittings in the rooms should be carefully considered as affecting the light, as this is very important. The object should be to obtain a colour which does not absorb a great amount of daylight, and yet at the same time a colour which does not fatigue the eyes. The colour which best satisfies these requirements is a greenish-grey. Antwerp blue and raw sienna, with white as a base will produce an extremely good tint.

There should be as little gloss as possible on the walls, so as to diminish the reflection of light.

The ceiling should be white.

In the new set of Rules, issued by the Board of Education in 1903, it is stated that the area of window-glass must not be less than one-fifth the area of the floor space in rooms used for teaching, and in other rooms not less than one-eighth. At least half the glass area of every window must be made to open for ventilation and for cleaning. In rooms used for teaching, windows should have square heads, be as near the ceiling as possible, and be of white glass only. The height from floor to glass line should be from 4ft. to 4ft. 6in. Provision for cross ventilation should be made in each case.

The whole question of lighting of class-rooms has a very important effect on the eyesight of the children. Such unfortunate fixtures as glazed windows obstruct the light, and maps which are highly glazed are most difficult for children in certain parts of the room to see, and cause them to strain their eyes, as well as to sit in unnatural positions.

VENTILATION.

In considering this important question I will first quote Rule 12 of the Board of Education:—

“The chief point in all ventilation is to prevent stagnant air; particular expedients are only subsidiary to the main principle. Apart from open windows and doors, there must be provision for copious inflow of fresh air, and also for the outflow of foul air, at the highest point of the room. The best way of providing the latter is to build to each room a separate air-chimney, carried up in the same stack with smoke flues. An outlet should be by a warm flue or exhaust, otherwise it will frequently act as a cold inlet. Inlets are best placed in corners of rooms furthest from doors and fireplaces, and should be arranged to discharge upwards into the room. Gratings in floors should never be provided. Inlets should provide a minimum of $2\frac{1}{2}$ square inches per child, and outlets a minimum of 2 square inches per child. All inlets and outlets should be in communication with the external air.

Besides being continuously ventilated by the means above described, rooms should as often as possible be flushed with fresh air, admitted through open windows and doors. Sunshine is of particular importance in its effects on ventilation, and also on the health of children.

(a) Although lighting from the left hand is considered so important, ventilation demands also the provision of a small swing-window as far from the lighting as possible, and near the ceiling.”

The subject of efficient ventilation in schools is an exceedingly difficult problem. It has involved a large expenditure of time and money. Installations have been fixed at great cost without much satisfaction, and even now there are many diverse opinions on this matter.

All will agree it is extremely important that the air of schools during school hours should be as pure as possible. There is no doubt that bad ventilation conduces to the spread of infectious diseases, as measles, diphtheria, scarlet fever, tuberculosis, etc., and also prevents the maximum benefit of the teaching from an educational point of view. The value of fresh air is now being recognised in the treatment of “consumption” by the “open air method,” and many persons who formerly slept in bedrooms with the doors and

windows tightly closed, and with fireplaces and crevices blocked up, now sleep with the windows open throughout the year. The beneficial results of improved ventilation are seen in the diminished death-rates in barracks, as compared with former days, and in the comparative rarity to-day of cases of erysipelas and gangrene which once occurred in such great numbers in hospital wards which were over-crowded with surgical cases.

Professor Jacob has stated that in some French cavalry stables the mortality of the horses was reduced from 197 to 20 per 1,000 by simple ventilation. Major Fisher has stated that "a horse seldom takes a 'cold' from exposure to cold, but frequently is made ill by being too warm. It is the *inside* not the outside air that gives them coughs, sore throats, congestion of the lungs, and sundry other ills to which horse flesh is heir." The same remarks apply with equal force to human beings.

It is well-known that persons engaged in outdoor occupations, such as farmers, labourers, etc., are stronger in physique than those who are compelled to follow sedentary occupations inside, such as clerks, etc.

As the latter cannot, however, earn their living, and as children cannot be taught, out-of-doors, every effort should be made to ensure that the air which they have to breathe is as fresh as possible.

The average frequency of respirations may be taken to number 16 per minute, and the average volume of each breath 30 cubic inches. The volume of air expired is about 17 cubic feet per hour. This air contains .6 cubic feet of Carbon Dioxide gas, moisture, and has an increased temperature (78° to 81° Fahr.). If it were possible to take this away immediately before it could mix with the other air, 17 cubic feet of fresh air supplied per head per hour would be sufficient. As this cannot be done, one must decide how much fresh air is required to dilute the impure air suitably. Generally speaking the air of a room cannot be changed more frequently than three times in one hour. This, of course, does not apply to very hot weather.

The air should be able to move freely about a room, as it may stagnate in recesses.

If under any conditions the air leaving a room is not the most vitiated the remaining air may be more impure than would be expected, and, on the other hand, if expired air left a room before it had an opportunity of mixing with the remaining air, the latter would be purer than would be expected, judging from sizes of inlets

and outlets, number of children present, length of time in school, etc. The results of breathing vitiated air may be immediate or more remote.

The immediate results are seen in the languid, sleepy scholar, who, although usually bright, is unable to fix his mind on the lesson, and who, perhaps, complains of a headache.

The more remote results are seen in the pale-faced child, who is now habitually languid, devoid of concentration, and susceptible to "colds." Such a child is very liable to be affected by the germs of any infectious diseases which may be present at the school. A badly ventilated schoolroom also makes it much more difficult for the teacher to carry on his or her work efficiently.

An instance of extreme acute impurity of air, attended by very fatal results occurred in the Black Hole of Calcutta.

There are several obstacles in the question of the provision of efficient school ventilation. Many school buildings are old, and do not lend themselves readily for this purpose from a structural point of view.

Also a difficulty in the general application of efficient ventilation to schools is that the bad quality of the air is something which cannot be seen. Moreover this deterioration is less evident to those who have been breathing this air for some time, than to a person coming into the room from the fresh air.

De Chaumont, in 1875, reported as a result of 473 analyses of air, that the smell of organic matter was, on the average, perceptible to the smell when the accompanying Carbon Dioxide gas resulting from respiratory or personal impurity reached 19.43 parts in 10,000; and that when it exceeded 9 parts in 10,000, shades of difference could no longer be detected by the sense of smell.

Regarding the standard of ventilation in schools, I think the one insisted upon for the air of weaving sheds in cotton mills, namely that there shall not be more than nine parts of Carbon Dioxide gas in 10,000 volumes of air, is a reasonable one. This standard, however, will be exceeded frequently in foggy weather, and when gas jets are burning.

I am of opinion that in many cases sufficient advantage is not taken of the means of natural ventilation already present.

In support of this I would state that I have frequently found Tobin's Tubes closed, or used as receptacles, when they should have been open; window-sill ventilators covered with pieces of oilcloth upon which plants are kept, and Sherringham valve ventilators

covered with pictures, ornaments, etc., to say nothing of the large number of windows which are closed when they should be open.

It is a mistake to imagine that a large amount of cubic space prevents the necessity of efficient ventilation. If a person occupied one room having a cubic capacity of 10,000 cubic feet, without ventilation, the air would become impure in three hours. Also, extreme height will not take the place of floor-space.

The following requisites are necessary in ventilation:—

- I. Inlets, or openings by which fresh air can enter the room.
- II. Outlets, or openings by which foul air can leave the room.
- III. A force—such as the wind or currents of air in natural ventilation; or electric fans, etc., in artificial or mechanical ventilation. Air should not enter a school-room with a greater velocity than 6ft. per second.

The other aims should be to provide clean, fresh, and warm air without draughts.

NATURAL VENTILATION.

This is the system which obtains in the majority of Blackburn Schools, and it is dependent upon wind, currents of air due to differences in temperature of the air, inside and outside, and also upon the other currents due to the heat of fires and gas jets.

When air is heated it expands, and when it cools it contracts. Hot air rises to the upper parts of a room, and cold air falls to the lower parts. Moist air also rises, as the vapour of water is lighter than air. The outlet openings should, therefore, be near the highest parts of a room, and the inlet openings for fresh air, should be arranged in such a way (about 5ft. above the floor) that the air is properly diffused without draughts, and so that it tends to go upwards, in order that before descending to the lower parts of the room it mixes with the other air in the room. The introduction of fresh air should be distributed at several points along the side of the room. Air finds its way into a room by the doors and windows, and in a less degree by the ceilings, walls, and floors.

Windows should be made to open at the top and the bottom. The lower portion should be constructed like a sash window, and the upper part should be fixed with sides and hinges below, so as to be capable of being pulled inwards to the room. The hinges should be "housed" so that when the hopper is open there is no space between its lower part and the adjoining part of the window. When open, the result is like a Sherringham valve ventilator in use. These

are also known as Hopper Windows, and they are an excellent arrangement. When there is cross ventilation, and windows are arranged in this way, one or more may be kept open at all seasons of the year. These hopper windows cause the air to enter in an upward direction. If the sides above-mentioned are not provided, air may flow in at the corners and cause a draught. As to whether windows should be opened at the top or bottom, or on one side of the room or the other, will require intelligent action on the part of the teacher.

These hoppers may be placed in upper and lower panes, and should be arranged so that they may be screwed inwards, much or little, according to the force and direction of the wind. The use of poles and window-cord to open and shut the hoppers is less efficient than the screw arrangement.

The top of the window may act as an outlet in cold weather, and as an inlet in hot weather. Louvered panes, and various kinds of "hit and miss" ventilators may be used. Also, a board may be placed below a lower sash, so as to raise it one or two inches, and provide a space between the upper and lower sashes for the air to enter in an upward direction.

I feel sure that too much stress cannot be laid upon the importance of windows as a means of ventilation. In the natural system, they are by far the most important factors.

In many schoolrooms all the windows are on one side of the room. In these cases two or three windows should be opened at the top, so that some of these openings may act as inlets, and others as outlets.

Ventilating fireplaces have an air-chamber behind the grate, which is heated by the fire. Fresh air is admitted from a pipe from outside, it is then warmed, and flows into the room.

Other special means of ventilation are: Perforated Bricks, Sherringham's ventilators, Tobin's tubes, McKinnell's ventilator, Perforated Ceilings, etc. Some of these are intended to act as inlets, but under certain conditions they may all act as outlets.

The supplies of fresh air for ventilation should be taken from points where it is not liable to become contaminated. Air may also be warmed by ventilating fireplaces, or by coils of tubes containing hot water. If warmed to the temperature of the room, or above that temperature, it is advantageous to introduce the air near the floor level, but if the air is cold, it must be admitted at a higher level.

in an upward direction, so as to prevent draughts. Frequently, with coils of hot-water pipes near inlet openings from the external air, the air is not sufficiently heated to be delivered at the level of the floor. The greater the force of wind the greater will be the velocity of the incoming air, and the less will be the opportunity for it to become heated. Outlets should be near the chimney, as the air at that part is warmer.

Natural ventilation can only be carried out efficiently when cross-ventilation, or perflation, is proper. This is liable to variations, owing to differences in the force and direction of winds. The force of wind should be sufficient to drive the air through the openings on one side, across the room (25ft wide) and through the openings on the other side. For efficient perflation the wind should blow at the rate of six miles per hour, and at right angles to the wall containing the inlet openings.

In through ventilation by means of the hopper windows, such as are fixed in the new portions of the Blackburn Fever Hospital, attention should be paid to the accurate fitting of the sides. An intelligent teacher, by noticing the direction of the wind, can generally have one or more windows open throughout the year. It is a mistake to believe that windows must either be widely opened or shut altogether. This, of course, implies that the heating of the room is efficient, for the questions of ventilation and heating in schools are very closely associated.

An open fireplace, *per se*, practically only removes air from the lower parts of the room, although when a fire is burning, about 14,000 cubic feet of air per hour are removed. But if used in connection with a chamber fixed behind the chimney, communicating by its lower and upper parts with the open air and the upper part of the room respectively, ventilation is rendered more efficient.

In heating by hot water or steam pipes an attempt should be made to arrange them so that they can heat the incoming air, and thus assist ventilation.

Outlet trunks in the ceiling, carried to the outside air, should be constructed in such a way that the air is not cooled too much during its escape. Reliance should, therefore, not be placed upon the temperature of the incoming air to heat the room. The heating of the room should be carried out apart from this, by means of fires, hot water pipes, radiators, etc. Inlets and outlets should communicate directly with the external air.

A permanent ventilation inlet opening of $2\frac{1}{2}$ square inches per head, as recommended by the Board of Education, does not seem sufficient for all conditions.

It is generally calculated that 1 square inch of unobstructed space will only allow 125 cubic feet of air to pass through per hour; so that for every 1,000 cubic feet of air needed, 4 square inches of permanent opening are necessary. This size of opening is necessary under the most favourable conditions, which are not always present, but in order to obtain good results under less favourable circumstances, a larger opening is necessary—even 6 or 8 square inches per head.

The Massachusetts law requires 30 cubic feet of pure air to be supplied each minute per pupil, *i.e.*, 1,800 cubic feet per head per hour.

It is also important to remember that there should be a definite proportion between the sizes of permanent outlet and inlet ventilation openings. If the outlets are much greater than the inlets, or vice versa, there will be draughts. Also an opening which is very small may cause more draught than a larger one, when the air enters at a great speed. If an inlet has been made so small as to cause a draught, it is only natural to block it up. An enlargement of the opening will frequently remedy the draught. Too much attention cannot be given to the position of inlets and outlets.

ARTIFICIAL VENTILATION.

This involves either the propulsion or extraction of air,—the establishment of a plenum, or vacuum, in the room to be ventilated. This may be carried out by revolving fans, ventilating ducts, etc.

If extraction be employed, the sources of supplies of fresh air cannot be controlled so easily as in the case of propulsion, where the air is taken from one source only.

The advantages of artificial ventilation are that it is constant under all conditions, and that the air may be suitably prepared as regards heat, purification, and moisture, and also that the source of fresh air and the volume delivered may be regulated.

I think it is unwise to instal artificial ventilation with windows which cannot be opened. Doors and windows should be taken into consideration when providing outlets. It is desirable to flush even mechanically-ventilated schoolrooms with open windows during play-

times. Open windows are also extremely valuable in summer weather, whatever may be the system of ventilation.

If any system of artificial ventilation entails the provision of windows which will not open, there is always the risk that at considerable expense air is driven through ducts which are very dusty and difficult to clean.

Certain observers—Carnelley, Haldane, Anderson, and Kerr,—have stated that they have proved the superiority of schools with mechanical ventilation over those which depend upon natural ventilation. There was less Carbon Dioxide, and many less microbes per litre in the schools with artificial ventilation.

Also the quality of school air remained constant with mechanical ventilation, whilst it progressively became worse as the session proceeded with natural ventilation. Moreover, better results educationally were obtained in mechanically-ventilated schools, and more grant earned. But in this connection it is well to remember that the so-called naturally-ventilated schools used for purposes of comparison with schools mechanically-ventilated, may not have had the natural ventilation arranged as perfectly as possible.

The question of artificial or mechanical ventilation is also closely associated with the warming of the school.

Care should be taken to prevent the air of the room from becoming too dry, and also to send in sufficient air.

Regarding efficient mechanical ventilation, it should be remembered that a wrongly-applied system may give bad results. Also, if the inlets and outlets are not placed correctly, the air may be driven through without affecting the greater volume of air in the room.

A Select Committee was appointed in 1902, to inquire into the ventilation of the House of Commons. After examining eminent witnesses, they have issued a report which has recently been printed. I will quote from this report.

The Committee had before them the following proposals for ventilating the House:—

(I.) THE SO-CALLED PLENUM SYSTEM.—

This consists, essentially, in keeping, by means of pressure at the intake, the air within the chamber at a constant higher pressure than the air outside; the exit being provided for simply by the difference of pressure, the aid of an exhaust power not being called in. An essential feature of this system

is that windows must not be opened, since the opening of a window, by affording an alternative outlet interferes with the proper flow of air. It is urged on behalf of this system that the exit of air being effected by the higher internal pressure which is kept uniform, a large exchange of air is accomplished without giving rise to any draughts.

But seeing that it is undesirable to trust simply and alone to pressure at the inlet, and that in this system the air makes its exit below the breathing level, the Committee hesitated in recommending that the present scheme should be exchanged for the Plenum system. The Committee are confirmed in this decision by the following considerations:—"As was stated above, an essential condition of the system is that all windows be kept closed, and that no doors be left open for a longer period than absolutely necessary for entrance or exit." The Committee believe that this condition would be very strongly objected to by Members. Moreover, the Committee learn that in buildings in which the system is in use the very regularity, it may be said the very monotony, of the supply, aided perhaps by the psychological influence of not being able to open a window, produces an unfavourable effect on those remaining in the building for any length of time. These speak of the air as "tiring," or "oppressive," and say they feel "that they want to open the window in order to get a little fresh air." Making every allowance for the play of prejudice, the testimony thus given does seem to the Committee to militate seriously against the system, and they cannot recommend that it should be adopted.

(II.) EXHAUST SYSTEM, WITH FLOW FROM ABOVE DOWNWARDS.—

This was advocated by Mr. Armitage. He would take the air by the present inlet, carry it to the ceiling, and draw it through the floor by means of an exhaust power at the base of The Clock Tower. To establish the flow downwards, he would trust entirely to the exhaust power, aided by some propulsion given to the incoming air, by a special washing system.

This differs from the Plenum system chiefly as regards the distribution of motive power. Seeing that it is undesirable to trust simply and alone to exhaust power at the outlet, and that it had been previously adopted in the Chamber, and given up as

being unsatisfactory, the Committee cannot recommend its adoption.

(III.) SYSTEM OF IN-FLOW AT THE SIDES, AND OUT-FLOW AT BOTH THE ROOF AND THE FLOOR.—

This was advocated by Mr. Francis Fox, who proposed to introduce by pressure, air at a very low velocity along the sides under the galleries, and elsewhere, and to remove the air by mechanical exhaust power through the floor and by the roof. The following is the conclusion regarding this system.

The Committee have not had before them satisfactory evidence that such a lateral supply could be brought about at such velocities, and in such a manner as to be effective, and yet not to give rise to sensations of "draught," and they are much impressed by the evidence of Dr. Shaw, to the effect that our present knowledge of ventilation is insufficient to guarantee that such a system could be installed with satisfactory results.

Although, therefore, they recognise fully the objections which may be urged against the present in-take through the floor from dust, etc., the Committee do not feel able to recommend that the present system should be immediately changed for some system by which air is admitted by the sides, and not by the floor.

They desire, however, to press very strongly the necessity of adopting Dr. Shaw's suggestion that an experimental inquiry, such as is outlined in the memorandum which he has sent in, as to the possibility of adopting some other system, and as to several problems in ventilation, should be instituted at once.

In the course of his evidence, Dr. Shaw (Secretary to the Meteorological Council), stated:—"I think it is quite possible that a system could be arranged that would supply the air where it is wanted, without making use of the floor as an inlet. I do not think it could be done by any contractor straight off; I think it would want experiment; and to make an initial experiment in the House of Commons would, I think, be very unwise. The success of any system, other than those which are in general use, and which are applied more or less on the same plan to buildings of different kinds—I say the success of any really scientific system depends upon the very nice adjustment of the temperature of the entering air to the temperature of the

air in the House. If air is introduced warm, it will certainly go to the ceiling; if it is introduced cold, it will certainly go to the floor. There is no possibility of avoiding those two alternatives. Consequently, if it is to descend in such a way that it reaches people near the floor without annoying them as a draught, it must be what I may call neither warm nor cold, but so adjusted that it sinks gradually. I do not think that plan has ever been carried out in practice, and a trial in some Committee-room, perhaps, on a small scale, would be a most valuable contribution to a very important subject."

Therefore the Committee recommend the institution of the inquiry into problems of ventilation still unsolved, with the view of introducing further improvements in the present system.

The Committee also desire to make, and to urge very strongly, the adoption of certain recommendations of a general character.

It is obvious that no system of ventilation of the Chamber and its adjuncts can produce satisfactory results unless the working of the system be accompanied and supported by a thorough, systematic, and frequent cleaning of all parts of the Chamber and its adjuncts.

Summarizing my conclusions regarding the ventilation of schools, I may state that:—

- I. Natural Ventilation is easy to manage, subject to certain conditions, which I have named, and will be more efficient if the fullest advantage is taken of this means.
- II. In some schools provided with Mechanical Ventilation, frequent reliance is placed upon natural ventilation.
- III. There is a diversity of opinion as to the value of the known systems of Mechanical Ventilation, and there is a need for further inquiry upon this subject.

WARMING.

The heat should be moderate and evenly distributed, so as to maintain a temperature of from 56 degrees to 60 degrees. When a corridor or lobby is warmed, the rooms are more evenly dealt with and are less liable to cold draughts. Where schools are wholly warmed by hot water, the principle of direct radiation is recommended. In such cases open fireplaces, in addition, are useful for extra warming on occasions, and their flues, for ventilation, always.

(a) A common stove, with a pipe through the wall or roof can under no circumstances be allowed. Stoves are only approved when—

- (i.) Provided with proper chimneys (as in the case of open fires);
- (ii.) Of such a pattern that they cannot become red hot, or otherwise contaminate the air;
- (iii.) Supplied with fresh air, direct from the outside by a flue of not less than 72in. superficial; and
- (iv.) Not of such a size or shape as to interfere with the floor space necessary for teaching purposes.

(b) A thermometer should always be kept hung in each room.

(c) Fireplaces and stoves should be protected by fire-guards.

The ceiling of the room where the heating apparatus is fixed should be rendered impervious to dust, so that it cannot be taken to the rooms above. The opening to this apparatus should be external, and not from a class-room.

Gratings in school floors for hot water pipes, or for any other purpose, should never be allowed.

It should be remembered that the warm air coming into a school-room may lose some of its heat to the walls and other colder parts, and deficient heating may result in bad ventilation.

It is extremely important that the warming of schoolrooms should be efficient.

Steam pipes require a less amount of pipe and radiating surface than hot water, and as the heat is intense, steam will heat rooms more quickly. Others advocate heating by hot water, and state that after the initial cost of installation the hot water system requires less fuel.

Hot air systems may involve the delivery, under a deficiency of water, vapour which is injurious to health.

Direct and Indirect Heating.

The *direct* method of heating is effected by placing radiators in the rooms. This should not be relied upon alone, but should be combined with inlets communicating externally behind the radiators. This is the direct-indirect method.

In the *indirect* method, the steam, or hot water pipes, are encased and the heat which is radiated from them is conducted by flues to the various rooms.

An outlet flue for impure air should be provided.

SANITARY ARRANGEMENTS.

Water-closets within the main school building are not desirable, and are only required for women teachers. All others should be completely disconnected from the school.

The sanitary conveniences, and approaches to them, must be separate for the two sexes.

Each closet must be not less in the clear than 2ft. 3in. wide, nor more than 3ft., fully lighted and ventilated, and supplied with a door. The doors should be at least 3in. short at the bottom, and at least 6in. short at the top. More than one seat is not allowed in any closet.

The number of closets required is shown in the following table.

			For Girls.	For Boys.	For Infants.
Under	30	Children	2	1	2
"	50	"	3	2	3
"	70	"	4	2	3
"	100	"	5	3	4
"	150	"	6	3	5
"	200	"	8	4	6
"	300	"	12	5	8

There should be urinals in the proportion of 8ft. per 100 boys. These must have a sufficient supply of water for flushing.

It is a good practice to insist that every portion of the sanitary conveniences should be well-lighted, so that there can be no opportunity for rubbish, etc., to escape detection.

Soil drains must always be laid outside the building (on a hard, even bottom of concrete), in straight lines, with glazed stoneware pipes, carefully jointed in cement, and made absolutely water-tight. A diameter of 4in. is sufficient, except for drains receiving the discharge of more than ten closets, in which case the diameter should be 6in. The fall should never be less than 1 in 30 for 4in., and 1 in 40 for 6in. drains. An inspection opening, or chamber, should be provided at each change of direction, so as to facilitate cleansing the drain without opening the ground. Every soil-drain

must be disconnected from the main sewer by a properly constructed trap placed on the line of drain between the sanitary conveniences and the public sewer. This trap must be thoroughly ventilated by at least two untrapped openings; one being the 4in soil pipe carried up full size above the roof, and the other an inlet pipe connected with the side of the trap furthest from the public sewer. Automatic flushing tanks are desirable.

DESKS AND SEATS.

I shall deal with this subject in a future report, when considering the medical inspection of the children in Blackburn schools.

WATER SUPPLY.

All schools should be provided with an adequate supply of wholesome drinking water.

In cases where such supply cannot be obtained from the mains of an Authority, or Company, authorised to supply water, care must be taken to ascertain that the supply proposed to be adopted is adequate in quantity, is of suitable character, and is not liable to pollution in any way, as, *e.g.*, by surface drainage, or by leakage from sewers, drains, cesspools, or other receptacles.

All water pipes should be so laid or fixed as to be properly protected from frost, and so that in the event of their becoming unsound the water conveyed in such pipes will not be liable to become fouled or to escape without observation.

There should be no direct communication between any pipe or cistern from which water is drawn for domestic purposes and any water closet or urinal.

All water closets and urinals should be provided with proper service cisterns, which, together with the outlet therefrom, should be capable of providing a sufficient flush.

Any cistern to be used for the storage of water should be water-tight, and be properly covered and ventilated, and should be placed in such a position that the interior thereof may be readily inspected and cleansed.

SITES AND PLAYGROUNDS.

Every school must have an open, airy playground proportioned to the size and needs of the school, and the site should, if possible, have a building frontage suitable to its area. A site open to the sun is especially valuable for the children, and important in its effects on ventilation and health.

The minimum size of site is a quarter of an acre for every 250 children. If the school is of more than one storey this area may be reduced, but a minimum unbuilt-on, or open space of 30 square feet per child should be preserved.

All playgrounds should be fairly square, properly levelled, drained, and enclosed, and should be separate for boys and girls, with separate entrances from the road or street.

A portion of the playground should be covered, having one side against the boundary wall. A covered way should never connect the offices with the main building; buttresses, corners, and recesses should be avoided.

An infants' school should have its playground on the same level as the school, and a sunny aspect is of special importance.

Covered playgrounds are very useful in wet weather. They may be erected without much cost, by fixing a covering of corrugated iron, in the sunniest corner of the playground, so that two sides may be formed by the boundary walls.

INFANTS' SCHOOLS.

Infants should not, except in very small schools be taught in the same room with older children, as the methods of instruction suitable for infants necessarily disturb the discipline and instruction of the other scholars. Access to the infants' room should never be through the older children's schoolroom.

- (a) The partition between an infants' room and any other school-room should be impervious to sound, and there should be no habitual means of direct communication, other than an ordinary door.
- (b) An infants' school and playground must always be on the ground floor.
- (c) No infants' class-room should accommodate, as a rule, more than 60 infants.
- (d) A space in which the children can march and exercise should be provided; a corridor intended for this purpose should not be less than 16ft. wide.
- (e) The babies' room should always have an open fire, and should be maintained at a temperature of not less than 60 degrees.

- (f) In infants' schools an allowance of 16in. per child at long desks will be sufficient. Dual desks should be 3ft. long.
- (g) The accommodation of an infants' school is based upon the number of children who can be seated at the desks, provided that a minimum of 9 square feet of floor space per child is obtained.

Having described in a general way the conditions which are desirable in schools, I will give the results of my investigations in the 52 Blackburn schools. It appeared more convenient to describe each school separately, and in later reports I hope to give you the results of my investigations in the medical inspection of the children at each school, so that the personal conditions of the scholars may be compared with the conditions found in the schools in which they have been taught.

In calculating the floor space per scholar, or the size of permanent inlet and outlet ventilating openings, etc., per scholar, it is obvious that the resulting figure per head will depend upon the number of children taken into consideration and allowed for.

Several sets of total numbers of children might be taken, *e.g.*:—

- I. The number on the register.
- II. The number present at the time of inspection.
- III. The average, daily or weekly attendance.
- IV. The average number of children present during those months of the year in which the attendance is the greatest.

As the total numbers of children on the register are rarely present at the same time, it would be unfair to calculate the amounts per head for these numbers, since the measurements of floor space, etc., for each child would then be smaller than are actually the case.

On the other hand, the number present at the time of inspection, and the average daily or weekly attendance about that time might be small owing to epidemic diseases, etc., and if this number was calculated for, the resulting figure would be greater than is actually the case.

Therefore, in estimating the floor space, etc., per head, I have decided to calculate for the average number of children present during those months showing the best attendance. This appeared to be the fairest standard to adopt, and one which could be used as

a common basis for all schools. But for the Mixed Departments and the Infants' Departments the months of the year in which the average attendance is best, are different.

Thus, it is the custom in this town to transfer children from the Infants' Departments to the Boys', or Girls', or Mixed Departments in the month of September. The result is that the months of June or July (*i.e.*, before the summer vacation) show the best average attendances in the Infants' Departments; and that the month of September (*i.e.*, after the summer vacation) shows the best average attendances in the Boys', Girls', and Mixed Departments.

Therefore, in estimating the floor area, etc., per head in Infants' Departments I have allowed for the average number present during the month of June, 1903, and for the other Departments I have similarly taken the figures for the month of September, 1903.

It must, however, be remembered that the numbers of children present in the class-rooms of some schools may vary. For example, at certain times of a day two classes may meet together in one room for a particular lesson, and a visit paid then would show the resulting floor space, lighting space, etc., per scholar to be much less than would be the case when only one class met in that room.

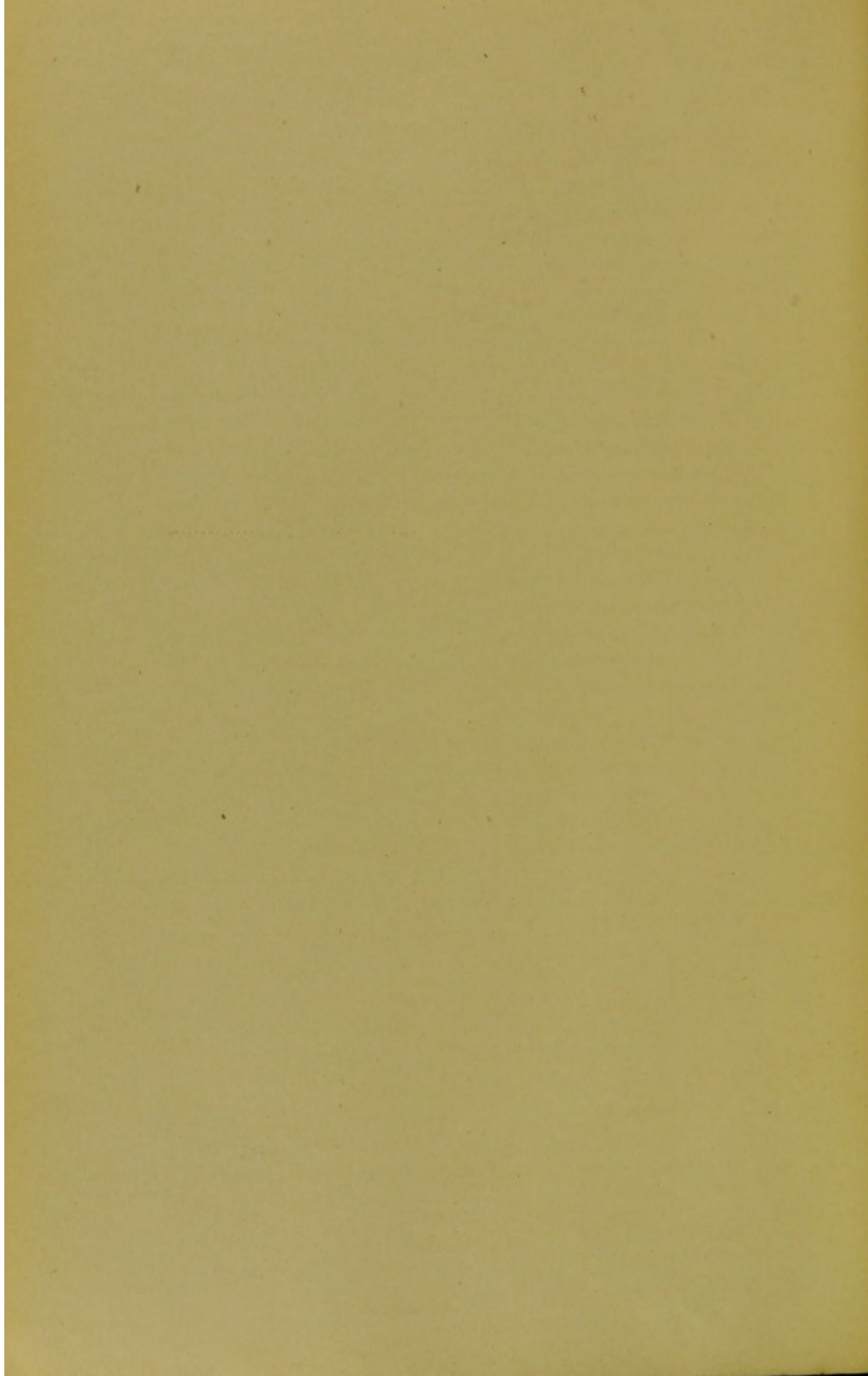
It should also be mentioned that had I taken the average number present at all during the months of June and September, the figures per head would have been less.

It is worthy of consideration whether or not a card, such as is used in common lodging houses should be hung up in each room of a school, showing the number of scholars who might be allowed to sit in that room at the same time.

The following is a copy of the form which I have prepared for the systematic inspection of each school:—

SCHOOL	
DATE AND TIME OF VISIT	
SITE AND SURROUNDINGS	
PLAYGROUNDS	
FOUNDATIONS	
WALLS.—Materials.....	Evidence of Damp.....
Surface.....	Colour.....
ROOF.—Construction	
NO. OF STOREYS	
STAIRCASE.—Construction	

ROOMS.—Number.....	Size
WINDOWS.—Number.....	Total Window Area.....
Direction of Light.....	Kind of Glass.....
Space made to Open	
DRAINAGE.—Lavatory Waste Pipes.....	Construction
and Course.....	Gullies.....
Construction and Trapping.....	Soil Pipes.....
Construction, Dimensions, Position, Course, Ventilation,	
Gutters round Eaves	Efficiency.....
Rain Pipes.....	Course, Disconnection, Destina-
tion, Leakage	
Drains.....	Tested.....
CLOSET ACCOMMODATION.—Number.....	Position, Cleanli-
ness, Lighting, Ventilation	Distance from
nearest Door or Window.....	Type.....
Flushing	
DRY REFUSE.—Scavenging	
CLEANLINESS OF ROOMS.—.....	Floor
CLOAK-ROOMS.—Position.....	Size.....
	Pegs.....
Ventilation, Heating, Lighting	
LAVATORY BASINS	
WARMING	
FURNITURE	
VENTILATION.—.....	Inlets.....
	Outlets.....
(Type and Size	
NO. ON BOOKS.....	Sexes.....
NO. PRESENT AT VISIT.....	
NO. IN EACH ROOM.....	
NO. OF CLASSES MEETING AT THE SAME TIME IN ONE ROOM	
WATER SUPPLY	



CHAPTER II.

The following is a list of the 52 Public Elementary Schools of Blackburn, according to number and name.

At the end of the Report will be found a spot map showing the situation of each school, and also numbered and named correspondingly with this list.

- | | |
|---|---|
| 1.—St. Gabriel's. | 26.—St. Anne's. |
| 2.—Four Lanes End. | 27.—St. Mary's, Higher Grade. |
| 3.—Cedar Street. | 28.—St. Matthew's. |
| 4.—St. James's, Shear Brow. | 29.—Maudsley Street. |
| 5.—Whalley Range (Council). | 30.—St. Joseph's. |
| 6.—St. Stephen's. | 31.—Wensley Fold. |
| 7.—St. Michael's. | 32.—St. Peter's. |
| 8.—Whalley New Road
(Girls' H.G.). | 33.—Mayson Street Day and
Industrial School. |
| 9.—Moss Street. | 34.—Audley Range. |
| 10.—Sacred Heart. | 35.—Bank Top. |
| 11.—St. John's. | 36.—St. Mary's, Islington. |
| 12.—St. Michael's, Union
Buildings. | 37.—St. Luke's. |
| 13.—St. Silas's. | 38.—Park Road. |
| 14.—Public Higher Grade,
Montague Street. | 39.—Witton Infants'. |
| 15.—Public Higher Grade,
St. George's, Alma Street. | 40.—Griffin. |
| 16.—St. Alban's, Larkhill
(G. and I., and Higher Grade). | 41.—All Saints. |
| 17.—St. Alban's, H.G. (Boys). | 42.—Christ Church, Mosley
Street. |
| 18.—Holy Trinity. | 43.—Christ Church, Rock-
cliffe Street. |
| 19.—St. Paul's. | 44.—St. Peter's, Mill Hill. |
| 20.—St. Patrick's. | 45.—Emmanuel. |
| 21.—Furthergate. | 46.—Mill Hill. |
| 22.—St. Barnabas's. | 47.—Mill Hill. |
| 22.—St. Thomas's. | 48.—St. Andrew's. |
| 24.—Accrington Road. | 49.—St. Bartholomew's. |
| 25.—Princes Street. | 50.—St. James's, Guide. |
| | 51.—St. James', Black-a-Moor. |
| | 52.—Lower Darwen, Council. |

ST. GABRIEL'S.

This school was erected in 1901, and is a one-storey building of brick.

Externally, the building is in very good condition.

Playgrounds.

The two playgrounds are in communication, measure 800 sq. yds., and are on an open site; the only flagging is in the form of a narrow pathway to the sanitary conveniences for males and females.

The Sanitary Conveniences for the boys consist of two compartments, which are on the trough system, and which are flushed by hand from a cistern twice a day. There is one urinal of good construction, measuring about eight linear feet. This is also flushed by hand.

The sanitary conveniences for the girls and infants consist of four compartments, similar in construction and flushing to those provided for the boys. In this series there is also one compartment for the female teachers. There is no special sanitary convenience for the male teachers.

The above conveniences are 45 ft. from the school at its nearest point.

Drainage.

The drainage appears to be satisfactory.

Dry Refuse.

The dry refuse is collected in a corner at the front of the school, in the bricked-in enclosure leading to the stairs which go down to the heating apparatus.

Cloak-Rooms.

The cloak-room for the boys is situated on the Cornelian Street side, near the main entrance. Its construction, ventilation, and pegs, are satisfactory and sufficient. In connection with this cloak-room there is one lavatory basin, the waste pipe of which is trapped, and discharges over a gulley outside.

The cloak-room for girls is situated on the opposite side of the building from that for the boys. It is similar in construction, etc., and also contains one lavatory basin. This cloak-room accommodation is also satisfactory.

There are three school-rooms—one large room (No. 5) for the mixed department, and two smaller rooms (Nos. 2 and 3) for the infants and babies respectively.

Walls.

The walls of these rooms internally are composed of cement, and are of a pale-green colour. They are also covered with varnished wood all round, to a height of 4ft. 6in. from the floor. This wood is of a brown colour.

Floors.

The floors of the rooms are composed of wooden blocks, set on concrete.

There are no appearances of dampness.

The school floors are swept daily and are washed once a year—during the Easter holidays.

Heating.

The heating is effected by means of hot water pipes carried round each room, and in the class-room for babies there is, in addition, an open fireplace, which has a suitable fire-guard.

There are louvred openings under the roof at the gable-end of the building, to aid ventilation. Boyle's cowls are also fixed above the roof.

Lighting.

Artificial lighting is by means of naked gas jets.

LARGE SCHOOLROOM (Mixed) No. 5.

The average number of boys and girls present during September, 1903, was 98. Three classes meet in this room constantly.

The floor space measures 1,350 sq. ft., thus allowing 13.7 sq. ft. per head. The total cubic capacity is 22,725 cubic feet, or 231 cubic feet per head.

The Ventilation consists of six Tobin's tubes (inlets), 15 sq. in.; two permanent outlet gratings in the ceiling; nine hoppers at the upper parts of windows (outlets), and two window sill ventilators, 48 sq. in.

The total area of permanent inlet openings is 63 sq. in., or .6 sq. in. per head; of the permanent outlet openings, 324 sq. in., or 3.3 sq. in. per head.

The Lighting is as follows:—

One class receives the light from behind and the left, another class from the right and left, and the third class from behind and the right.

The total lighting area measures 382 sq. ft., and is about one-third of the floor space.

CLASSROOM No. 2.

Used by the older infants.

The average number present in June was 43.

Floor space measures 460 sq. ft., thus allowing 10.7 sq. ft. per head.

The total cubic capacity is 6,823 cubic feet, or 158 cubic feet per head.

The Ventilation consists of two permanent gratings in the ceiling, two Tobin's tubes, one window with a Sherringham valve inlet, and one swinging pane in the skylight, measuring 3ft. x 2ft.

The total area of permanent inlet openings is 5 sq. in., or .1 sq. in. per head, and of the permanent outlet openings 145.5 sq. in., or 3.3 sq. in. per head.

The Lighting of this room is from the left, and the total lighting area measures 88.5 sq. ft., or about one-fifth of the floor-space. Light is also received, indirectly, from the right.

CLASSROOM No. 3 (For Babies).

The average number present in June was 48.

Floor space measures 470 sq. ft., or 9.8 sq. ft. per head. The total cubic capacity is 6,956 cubic feet, or 144 cubic feet per head.

The Ventilation consists of one grating in the ceiling, 12in. x 12in.; two Tobin's tubes, 5 sq. in.; one open fire-place, with guard, and one window with a Sherringham valve inlet in the centre.

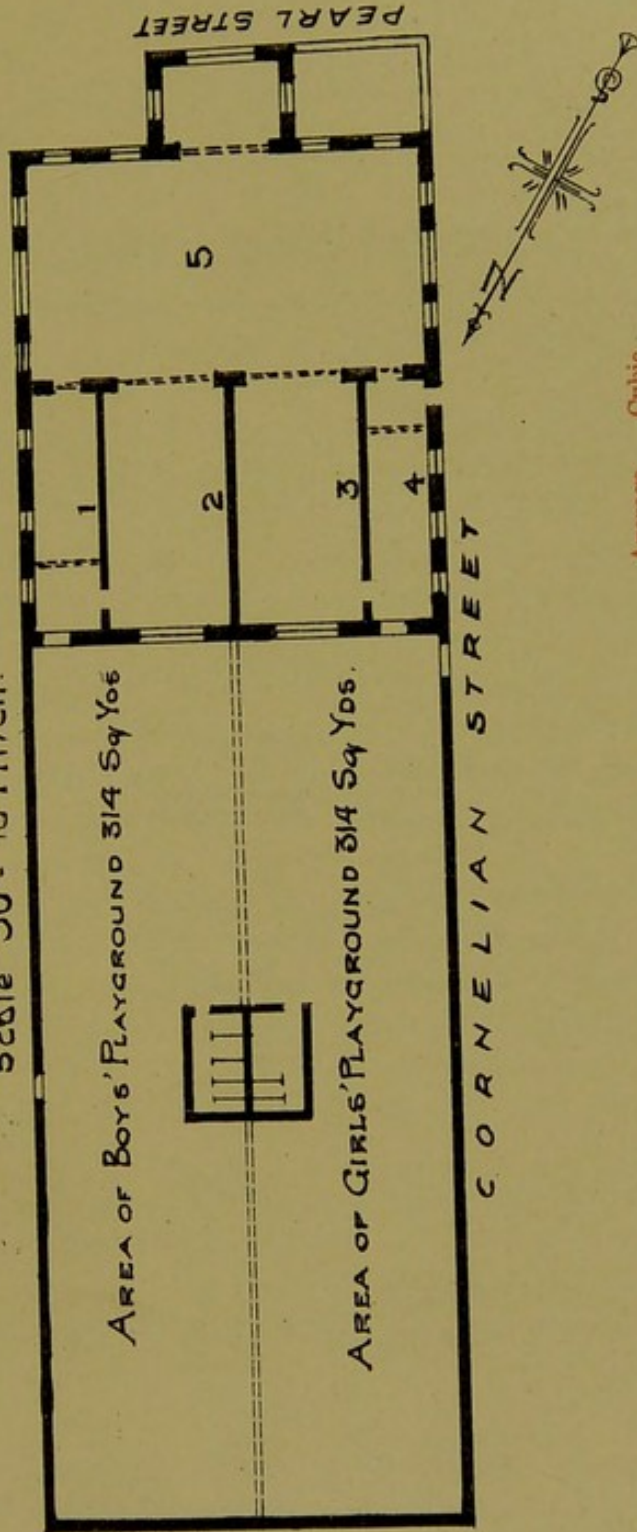
The total area of permanent inlet openings is 5 sq. in., or .1 sq. in. per head, and of the permanent outlet openings 144 sq. in., or 3.3 sq. in. per head.

The Lighting of this room is from the left chiefly, but some indirect light is received through the glass part of the partition which divides it from the large schoolroom.

The total lighting area is 88 sq. ft., which is about one-fifth of the floor space.

ST GABRIEL'S SCHOOL - CORNELIAN STREET

Scale 30" to 1 inch.



Room marked	Average height.	Cubic feet.
1.....	29' 6" x 8' 3" x 14' 10" =	3610
Do. 2.....	30' 0" x 15' 4" x 14' 10" =	6823
Do. 3.....	30' 0" x 15' 8" x 14' 10" =	6956
Do. 4.....	29' 6" x 8' 3" x 14' 10" =	3610
Do. 5.....	50' 0" x 27' 0" x 16' 10" =	22725



Recommendations.

- I. A covered movable receptacle should be provided for the dry refuse.
- II. The inlet ventilation openings into the rooms should be enlarged.

FOUR LANES END SCHOOL.

This School was re-built in 1894, and is a one-storey building of stone. It is situated in Revidge Road, on a very open site.

Playgrounds

There are two playgrounds, the areas of which are 1,902 sq. yds. The boys' is separated from the girls' by a stone wall and iron railings. That for the girls' is flagged all over. The one for boys is partly flagged, and an area beyond is used for football, etc. There are two covered playgrounds, one for boys and one for girls, 4yds. x 2yds. each.

Sanitary Conveniences.

The sanitary conveniences are of the Adams' trough variety, and consist of two compartments for the boys, and four for the girls. There are also two for the teachers. They are all flushed three times a day automatically.

There are two urinals—one adjoining the boys' conveniences and measuring about 6 linear feet, and one facing the doors of the conveniences, about 12 linear feet, flushed by the rain-water from the roof of the w.c.'s. These sanitary conveniences are 16 yards from the school.

Their lighting and ventilation are very good.

Dry Refuse.

The refuse from the school is placed in an ash receptacle adjoining the roadway near the school.

Heating.

The heating is effected by means of hot water pipes placed round the rooms.

Cloak-Rooms.

There are two cloak-rooms situated at the entrances of the Mixed and Infants' Departments respectively. Seventy-seven hooks are provided for the infants and are placed against the walls; 150 hooks have been provided for the mixed scholars.

The infants' cloak-room is heated by hot water pipes, and in the mixed cloak-room there is a fireplace in addition.

There is a lavatory basin in the mixed cloak-room, the waste pipe of which is directly connected to the drain.

The cloak-room for the infants communicates directly with the infants' room.

There are three schoolrooms—one large room for the mixed scholars (No. 1), class-room (No. 3), and the infants' class-room (No. 2).

Walls.

The internal walls of these rooms are rendered with plaster, and are painted a pea-green colour. They need renovating. There is a covering of wood to a height of 3ft. from the floor all round the walls, which are painted a brown colour.

Floors.

The floors are composed of wooden boards, with a ventilated cavity underneath. They are swept every night and cleansed four times a year.

Lighting.

Artificial lighting is by means of 16 naked gas jets.

LARGE MIXED SCHOOLROOM No. 1.

This room is used by the Mixed Department.

The average number present during the month of September 1903, was 81—45 males and 36 females.

The floor space measures 792 sq. ft., or 9.7 sq. ft. of floor area per head.

The total cubic capacity is 16,104 cubic feet, or 198.8 cubic feet per head.

Ventilation. The ventilation of this room consists of two sash windows, each 3ft. 4in. \times 3ft. 6in., and three others which open on hinges 2ft. 10in. \times 3ft. 10in.; one 3ft. \times 2ft., at 16ft. from floor, and two 3ft. 4in. \times 3ft. 6in., at 12ft. from floor.

There are two ventilating inlets in the window-sills, 7½in. \times 4½in., and a grating in the dome = 2ft. \times 2ft.

The permanent inlet ventilation consists of two inlets in window-sills, 7½in. \times 4½in., or 67 sq. in., thus allowing .82 sq. ins. per head.

The permanent outlet ventilation consists of an iron grating in dome, 2ft. \times 2ft., or 576 sq. ins., thus allowing 7.1 sq. ins. per head.

FOUR LANES END SCHOOL.

Scale 30ft to 1 inch.

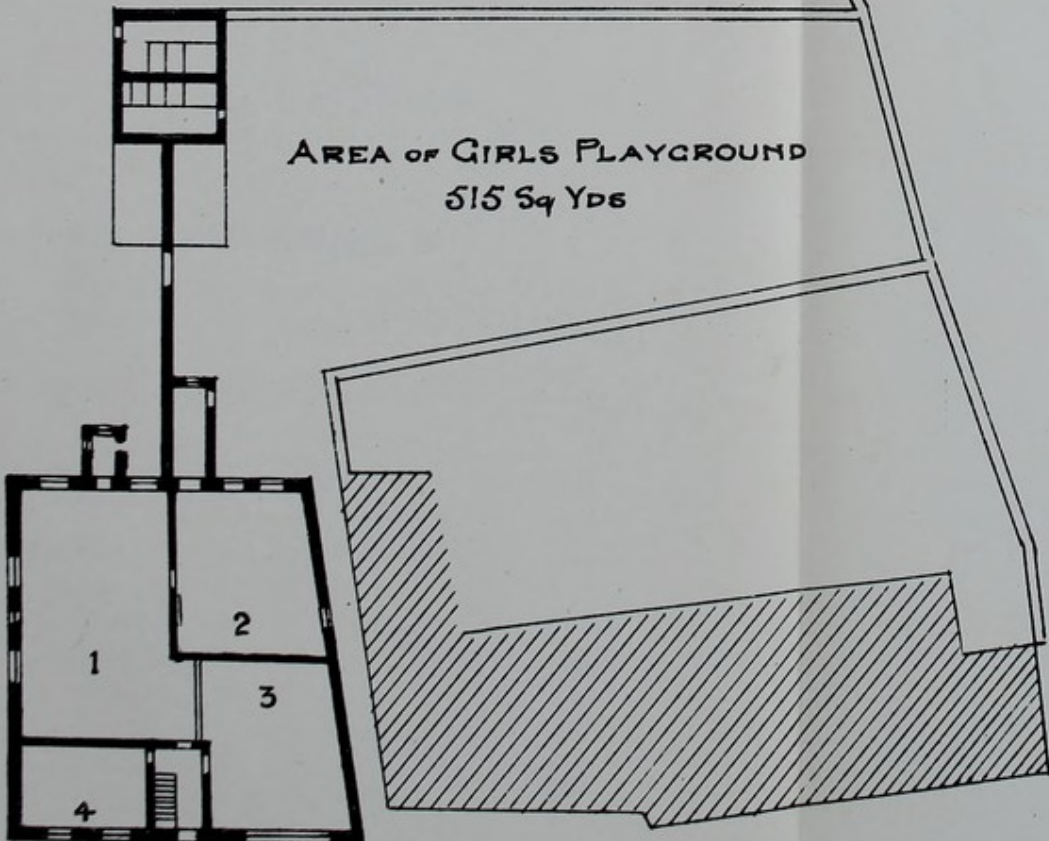
Room Marked.	Average height, feet.	Cubic feet.
1	36' 0" x 22' 0" x 20' 4"	= 16104
2	20' 6" x 24' 0" x 20' 6"	= 10086
3	20' 0" x 24' 0" x 16' 6"	= 7920
4	18' 0" x 10' 7"	

AREA OF PLAYGROUND (BOYS)

1387 Sq Yds

AREA OF GIRLS PLAYGROUND

515 Sq Yds



REVIDGE ROAD



Lighting. The light is from behind and the left.

The total lighting area is 186 sq. ft., or about one-fourth of the floor space.

Some of the windows behind are frosted.

The MIXED CLASSROOM No. 3.

This room contained an average attendance during September, 1903, of 52—*i.e.*, 27 males and 25 females.

The floor space is 480 sq. ft., or 9.2 sq. ft. per head. The total cubic capacity is 7,920 cubic feet., or 152.3 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, which act as inlets, and measure 1ft. 8in. \times 9in., at 7ft. from floor, and one casement window, 4ft. \times 1ft. 9in. The outlet ventilation consists of an iron grating in the dome, 2ft. \times 2ft.

There is no permanent inlet ventilation.

The permanent outlet ventilation is by means of an iron grating in the dome, or 576 sq. in., this being equal to 11 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 72 sq. ft., or nearly one-sixth of the floor area.

The light is from the left, and indirectly from the front, through the glass slides which separate this room from No. 1 Room.

The glass is transparent.

INFANTS' CLASSROOM No. 2.

The average number present in this room during the month of June, 1903, was 70. The floor area = 492 sq. ft., or 7.0 sq. ft. per head.

The total cubic capacity is 10,086 cubic feet, or 144 cubic feet per head.

Ventilation. The ventilation of this room is by means of the windows only, *viz.*, two sashes 3ft. 8in. \times 3ft. 6in., one window, opening on hinges, 3ft. 6in. \times 4ft., 10ft. from floor, and two 3ft. 8in. \times 3ft. 6in., opening on hinges, at 14ft. from floor.

Underneath the lower sashes of two windows are fixed strips of wood, forming Hinkes-Bird ventilators (176 sq. in.), which allows air to enter the room between the upper and lower sashes.

There is no permanent outlet or inlet ventilation.

There is slight cross ventilation.

Lighting. The lighting area of this room is 91 sq. ft., or one-fifth of the floor space, and is effected by sash windows, and windows opening on hinges.

The light is from the right.

The glass is transparent.

Recommendations.

- I. Sufficient permanent ventilation openings should be provided where necessary.
- II. Rooms 1, 2, and 3 should not contain more than 79, 49 and 55 respectively.
- III. Two more sanitary conveniences should be provided.
- IV. The lavatory waste pipes should be trapped and suitably disconnected.
- V. The infants' cloak-room should not communicate directly with the class-room.

CEDAR STREET SCHOOL.

The Mixed School was erected in 1891, and the Infants' School in 1894. The school is a one-storey building of stone.

Externally the building is in very good repair.

Playgrounds.

There are two playgrounds separated by iron railings, the total area is 1,134 sq. vds., and the whole surface is flagged. The boys' playground measures 610.9 sq. yds., and the girls' playground 523.6 sq. yds. No portion is under cover.

Sanitary Conveniences.

The sanitary conveniences for the boys consist of three compartments, which are on the trough system, and a urinal. Also there are three compartments for the girls and infants, and a urinal for the latter. These conveniences are flushed daily by means of a 30-gallon cistern for each set. There are two separate sanitary conveniences for the teachers. The passage in front of the conveniences is covered, and has a door at each end.

The above conveniences are 7yds. from the school at its nearest point.

Refuse.

The dry refuse is collected in a corner of the yard, in a brick ash-pit, which is covered and which is 31yds. from the school.

Drainage.

The drainage system appears to be satisfactory.

Cloak-Rooms.

The cloak-room for the girls (No. 9) is situated at the St. James' Road end of the school, near the front door of the mixed school. It measures, 19ft. 2in. \times 12ft. 6in., open to the ceiling, and on one side is a wooden and glass partition, 7ft. high, forming a passage leading to the school. There is a window-sill ventilator in this passage. The internal walls are of brick, and to a height of 4ft. from the floor they are formed of brown enamelled glazed brick. There are 100 pegs, and the room is well lighted. The windows do not open. The floor is of wooden blocks.

There is a lavatory basin in this room. The accommodation is said to be insufficient each winter.

There is no cloak-room for the boys.

There are four schoolrooms for the Mixed Department—one large room, No.8, and three class-rooms, Nos. 5, 6, and 7.

Walls.

The walls of these rooms internally are of bricks which are enamelled and coloured brown to a height of 4ft from the floor, the remainder being of a dark pink and blue wash.

Floors.

The floors of the rooms are boarded, and are well ventilated underneath.

There are no appearances of dampness

The school floors are swept daily, and washed twice a year—during the Midsummer and Christmas holidays.

Heating.

The heating is effected by means of hot water pipes carried round each room.

There are louvred openings under the roof at each gable-end of the building to aid ventilation, and three cowls in the roof, one being in the roof of the Infants' Department.

Lighting.

Artificial lighting is by means of naked gas jets.

LARGE SCHOOLROOM (Mixed) No. 8.

The average number of boys and girls present during September, 1903, was 123.

Three classes meet in this room constantly.

The floor space measures 1,407 sq. ft., thus allowing 11.4 sq. ft. per head. The total cubic capacity is 28,140 cubic feet, or 228.7 cubic feet per head.

The Ventilation consists of three Tobin's tubes, 12in. x 6in., opening 6ft. from the floor; five window-sill ventilators (inlets), 7½in. x 5in.; three outlet gratings in the ceiling over the gas jets, 12in. in diameter, leading to cowls on the roof; and two hopper windows, 2ft. 2in. x 4in., in the top portion of the window. There is one window which will open on a swivel, 2ft. 10in. x 2ft. 2in.

There is no cross ventilation.

The total area of the permanent inlet openings is 403 sq. ins., or 3.2 sq. in. per head, and the total area of the permanent outlet openings is 339 sq. in., or 2.7 sq. in. per head.

The Light is received from behind, and the right.

The total lighting area measures 301 sq. ft., and is about one-fourth of the floor space.

CLASSROOM No. 5.

The average number present in this room was 46.

The floor space measures 323 sq. ft., thus allowing 7.0 sq. ft. per head. The total cubic capacity is 6,460 cubic feet, or 140.4 cubic feet per head.

The Ventilation consists of one Tobin's tube, 11in. x 4in.; one 3½in. x 4in. window-sill ventilator, acting as inlets; one outlet, 12in. in diameter, in ceiling, over the gas jet. Also one window can be opened on swivel at about 9ft. from floor, 2ft. 2in. x 3ft.

The total area of the permanent inlet openings is 58 sq. in., or 1.2 sq. in. per head, and the area of the permanent outlet openings is 113 sq. in., or 2.4 sq. in. per head.

The Light in this rooms is received from the left, and the total lighting area measures 47 sq. ft., or about one-seventh of the floor space.

CLASSROOM No. 6.

The average number present in this room was 45.

The floor space measures 320 sq. ft. thus allowing 7.1 sq. ft. per head. The total cubic capacity is 6,401 cubic feet or 142.2 cubic feet per head.

Ventilation.

The ventilation consists of one Tobin's tube, 11 in. \times 4 in., at 5 ft. 9 in. from the floor; one window-sill ventilator, 3½ in. \times 4 in., acting as inlets; and one outlet in the ceiling over the gas jet, 12 in. in diameter. One window can be opened 2 ft. 2 in. \times 3 ft., on swivel, at about 9 ft. from floor, and one hopper, 2 ft. 2 in. \times 4 in., at 11 ft. from floor.

The total area of the permanent inlet openings is 58 sq. in., or 1.2 sq. in. per head, and of the permanent outlet openings 113 sq. in., or 2.5 sq. in. per head.

Lighting.

The light is received from the left, and the total lighting area measures 76 sq. ft., or about one-fourth of the floor space.

CLASSROOM No. 7

This room is the same as No. 5, but the floor space is 309 sq. ft., or 6.5 sq. ft. per head, and the cubic capacity is 6,175 cubic feet, or 134.2 cubic feet per head.

INFANTS' DEPARTMENT.

Cloak Room.

The cloak-room for the infants (No. 2) is situated at the Holly Street end of the school, between the front and the back door, measures 16 ft. 6 in. \times 14 ft. 4 in., and is open to the ceiling. Two sides are constructed of a wooden and glass partition to a height of about 6 ft. and form a passage leading to the infants' class-room. The internal walls are of brick, and to a height of 4 ft. from the floor there are brown enamelled glazed bricks. There are 50 pegs, and the room is well lighted. There are two outlet ventilators, one in the chimney-breast measuring 144 sq. in., and one in the ceiling over the gas jet measuring 113 sq. in. The window can be opened as a hopper. There is one window-sill inlet ventilator. The floor is constructed of wooden blocks.

The cloak-room accommodation is said to be insufficient in winter. There is a lavatory basin in this room.

This department consists of one large room and a class-room.

LARGE ROOM No. 4.

The large room, No. 4, is occupied by babies, and other children under five years.

The average number present during June, 1903, was 113.

Two classes meet in this room constantly, part of which is a gallery.

The floor space measures 698 sq. ft., thus allowing 6.1 sq. ft. per head. The total cubic capacity is 13,969 cubic feet, or 123.6 cubic feet per head.

The Ventilation consists of four Tobin's tubes, $11\frac{1}{2}$ in. \times 5 in., 6 ft. from the floor; three window-sill ventilators, 3 in. \times $2\frac{1}{2}$ in., acting as inlets; and two gratings in the ceiling over gas jets acting as outlets, 12 in. in diameter. Three windows, 2 ft. 2 in. \times 2 ft. 9 in., can be opened, on swivels, at about 12 ft. from floor, and two casements at 5 ft. 6 in. from floor, 3 ft. \times 2 ft. 5 in.

The total area of the permanent inlet openings is 252 sq. in., or 2.2 sq. in. per head, and of the permanent outlet openings, 226 sq. in., or 2 sq. in. per head.

The Light is from the back and left.

The total lighting area measures 187 sq. ft., or nearly one-fourth of the floor area.

CLASSROOM I. (for children over five years).

The average number present during June, 1903, was 43.

The floor space measures 409 sq. ft., or 9.5 sq. ft. per head. The total cubic capacity is 8,194 cubic feet, or 190.5 cubic feet per head.

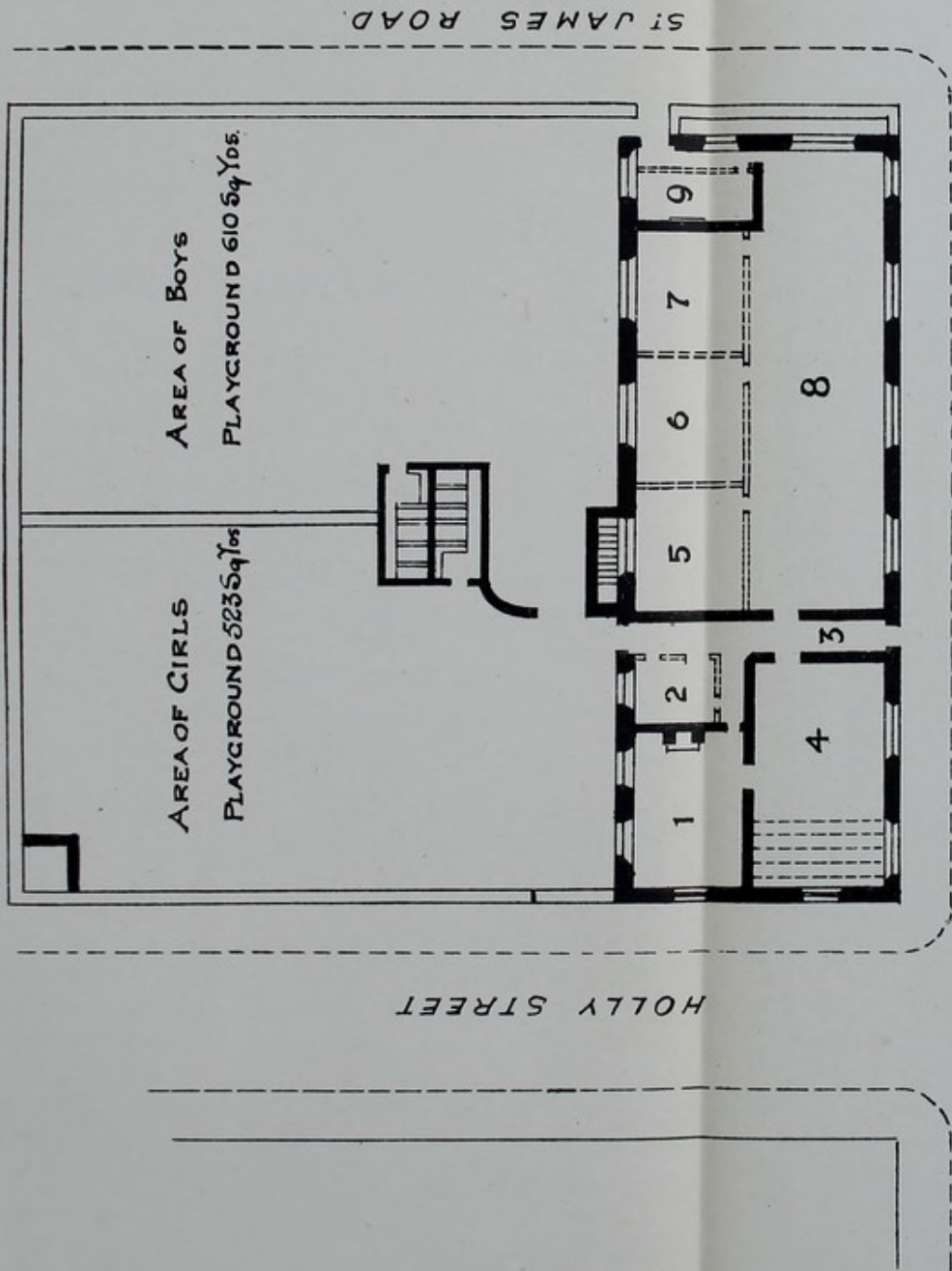
The Ventilation consists of three Tobin's tubes, $11\frac{1}{2}$ in. \times 5 in., 6 ft. from the ground; three window-sill ventilators, 3 in. \times $2\frac{1}{2}$ in., an opening in the chimney-breast, 18 in. \times 12 in., two gratings in ceiling, 12 in. in diameter, and one open fire-place. Two hopper windows, 2 ft. 2 in. \times 4 in., can be opened, and two casements, 2 ft. 4 in. \times 2 ft. 5 in., at 5 ft. 6 in. from floor.

The total area of the permanent inlet openings is 195 sq. in., or 4.5 sq. in. per head, and that of the permanent outlet openings is 442 sq. in., and an open fire-place, with guard, or 10.3 sq. in. per head, excluding the fire-place.

The Light is from behind and the left.

The total lighting area measures 118 sq. ft., or about one-third of the floor area.

— CEDAR STREET —
 — PRIMITIVE METHODIST SCHOOL —
 Scale 30ft to 1 inch.



Room marked.	Average height	Cubic feet.
1...24' 10" x 16' 6" x 20' 0"	20' 0"	8194
2...16' 6" x 14' 4" x 20' 0"	20' 0"	4729
3...21' 6" x 4' 9" x 20' 0"	20' 0"	
4...34' 6" x 20' 3" x 20' 0"	20' 0"	13969
5...19' 0" x 17' 0" x 20' 0"	20' 0"	6460
6...18' 10" x 17' 0" x 20' 0"	20' 0"	6401
7...18' 2" x 17' 0" x 20' 0"	20' 0"	6175
8...69' 6" x 20' 3" x 20' 0"	20' 0"	28147
9...19' 2" x 12' 6" x 20' 0"	20' 0"	

ST JAMES ROAD

CEDAR STREET

— GROUND PLAN —

HOLLY STREET



Recommendations.

- I. A cloak-room should be provided for the boys.
- II. The ventilation in the cloak-rooms for girls and infants, and in class-rooms where necessary should be improved, and window hoppers should be provided in the large school-room of the Mixed Department.
- III. The lavatory waste pipes should discharge over a gully outside.

ST. JAMES' SCHOOL.

Oozebooth Terrace, off Shear Brow.

The infants' room was built in 1877, and the other rooms in 1895. The building is one storey, and is situated in Oozebooth Terrace (Shear Brow), on an open site.

Externally the building, which is brick, is in very good condition. There is one Cooper's ventilator in the roof.

Playgrounds. There are three playgrounds. Their measurements are:—Boys', 190 sq. yds.; Girls', 205 sq. yds.; Infants', 240 sq. yds. There is no covered playground.

These playgrounds are separated from one another. The boys' is separated from the girls' by means of very stout boards, which form a fence. The infants' playground is at the other side of the mixed school.

The surfaces are unflagged, except the infants' playground, which has a passage from the gate, in the road way, to the entrance of the school. This flagging is about 8yds. in length, and 2½yds. in width. The remainder is unflagged.

Sanitary Conveniences. The sanitary conveniences for boys consist of two earthenware troughs, with shafts 2ft. deep, carried up to the seat-boards—one in each compartment. There is one urinal well constructed, which measures 11 linear feet. The surface of the wall is rendered with cement, there is a gully placed in the centre, but there is no automatic flushing.

The sanitary conveniences for girls consist of four compartments, which are on the trough system, similar to those provided for the boys. These, together with the boys', are flushed automatically on alternate days; the cistern has a capacity of 20 gallons.

The sanitary conveniences for infants consist of three compartments, which are also on the trough system. In this series there is also one compartment for the teachers.

The compartments of the sanitary conveniences are efficiently ventilated, and lighted to some extent by the ventilation openings.

There are face walls 5ft. high in front of the boys' and girls' conveniences, and the infants' conveniences are 2yds. from the gable-end of the infants' room.

The boys' and girls' conveniences are 18 yds., from the nearest door or window, and the infants' conveniences are 2 yds. away from the door which communicates with the schoolroom.

There is one lavatory basin in a room between No. 4 room and the sanitary conveniences for infants.

Drainage. The drainage appears to be satisfactory. The waste pipes from the lavatories discharge over gullies, and downspouts are directly connected to the drains.

Refuse. The refuse from the school is placed on the roadway, as there is no receptacle.

Cloak-Rooms. The boys' cloak-room is situated on the left side of the entrance to the mixed school, and measures 17ft. 8in. x 9ft. 3in. There are about 80 hooks on the walls. There is evidence of dampness on the outside wall, and consequently any clothes hanging on this wall are liable to be damp. The inside walls are plastered and painted. The room is warmed by hot water pipes. The lighting and ventilation are good.

The girls' cloak-room is situated on the right-hand side of the entrance to the mixed school, measures 17ft. 6in. x 9ft. 3in., and in every respect is the same as that for the boys. The outer wall of this room is also damp. There are about 80 hooks placed against the walls.

There is no cloak-room for the infants, their clothes being hung on the outside walls of the schoolroom. There are about 70 hooks.

In connection with the boys' and girls' cloakrooms there are two white glazed earthenware wash-basins in each room. The waste pipes from these are trapped, and discharge over gullies outside.

There are four schoolrooms: 1, 2 and 3 are used for the mixed scholars; 4 for infants and babies.

The Internal Walls are plastered, and painted to a height of 5ft. 6in. from the floor to the ceiling, of a pale green colour. There are boards round the rooms to a height of 4ft., which are varnished brown. The ceilings are whitewashed; the ceiling in the infants' room is slightly out of repair.

Floors. The floors are boarded, and the cavity underneath is ventilated. There are two trap-doors in the floor of the infants' room, leading to the boiler-house.

There are no appearances of dampness, except in the cloak-rooms above-mentioned.

The floors are swept daily, and washed twice a year. They would undoubtedly be cleaner if the playgrounds were flagged.

Heating. The heating of the rooms is carried out by means of pipes placed round each room, and in the infants' room there are two fire-grates, without fire-guards, in addition to the pipes.

LARGE ROOM 3 and CLASSROOM 1 (Mixed).

Class-room No. 1 is partitioned off by glass slides, and the classes in these rooms exchange frequently, so that the actual number present cannot be taken separately.

There are three classes in these two rooms.

No. 3 Room.

The approximate number present during September, 1903, was 61. This room measures 44ft. 8in. \times 24ft. 3in., or 1,083 sq. ft., allowing 17.7 sq. ft. per head. The total cubic capacity is 16,786 cubic feet, or 275.1 cubic feet per head.

Ventilation. The ventilation of No. 3. Room consists of two outlets in the ceiling, 2ft. 6in. \times 2ft. 6in., and four windows made to open, acting as outlets, two of which measure 3ft. \times 3ft., and the remaining two, 2ft. \times 1ft.

These windows are so placed as to afford cross ventilation. There are no inlets other than doors and windows.

The permanent outlet ventilation consists of two outlets in ceiling, or 1,800 sq. in., this being equal to 29.5 sq. in. per head.

Lighting. The lighting of Room No. 3, is as follows: The total lighting area measures 125 sq. ft., which is about one-eighth of the floor space.

The glass is transparent.

The direction of the light in relation to the scholars is, for two classes partly left and right; and one class, from behind and indirectly from the left through the glazed slides which separate this room from classroom 2.

No. 1 Classroom.

There are no definite classes occupying this room; sometimes two classes are in it during the morning, and different classes in the afternoon, and sometimes they change during the morning or afternoon. The maximum numbers stated to occupy this room are about 22 boys and 18 girls.

It measures 24ft. 3in. \times 15ft. 4in., or 371 sq. ft., and if the above number is calculated for, there will be 9.3 sq. ft. of floor space per head.

The total cubic capacity is 5,761 cubic feet, or 144 cubic feet per head.

Ventilation. The ventilation consists of two windows which open on hinges, measuring 3ft. \times 3ft. 6in., at the top.

There is slight cross ventilation in this room.

There are no permanent inlet or outlet openings.

Lighting. The direction of the light is from the left, behind, and indirectly from the right, through the glass slides which separate this room from the large room.

The glass is transparent.

The total lighting area of this room measures 105 sq. ft., which is one-third of the floor space.

No. 2 ROOM.

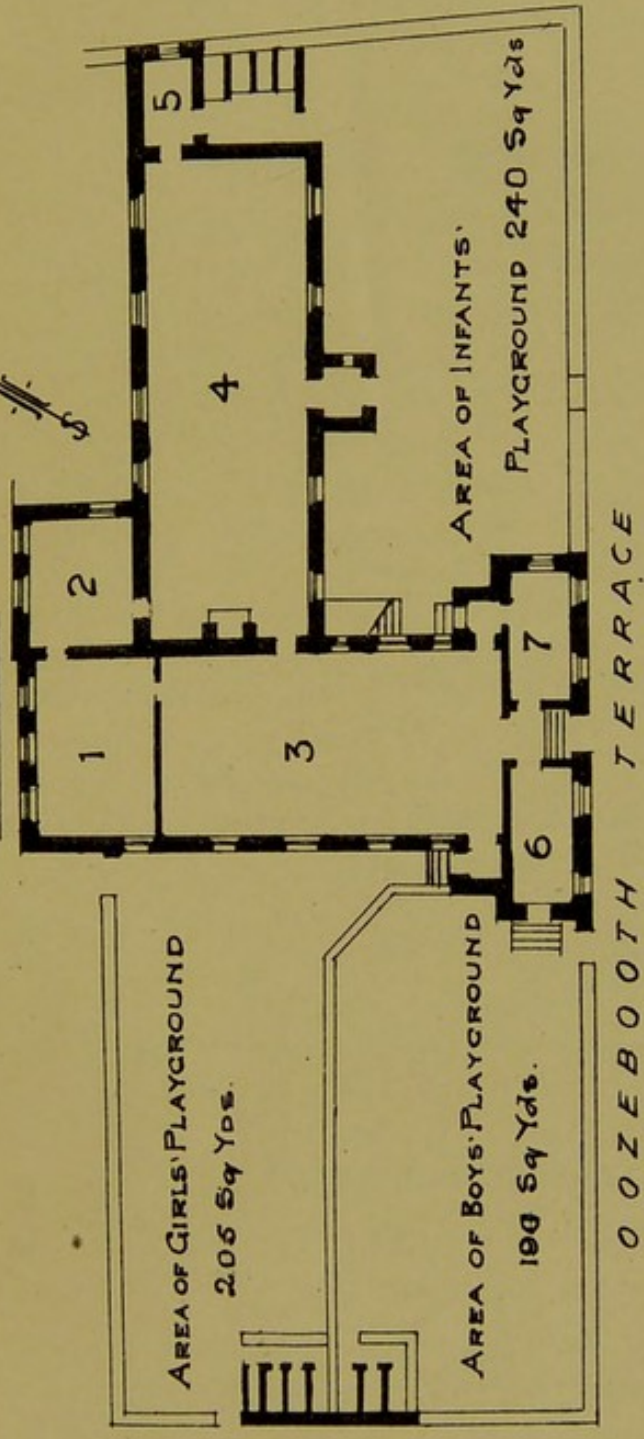
This room is not used for teaching. It is entered from class-room No. 1, and also from the infants' room, No. 4.

It measures 18ft. 4in. \times 15ft. 6in., or 284 sq. ft., and the cubic capacity is 3,552 cubic feet.

Ventilation. There is no inlet ventilation in this room. The outlet ventilation consists of two windows, 3ft. \times 2ft., at 9ft. from the floor, which open inwards, and an outlet in the ceiling, 2ft. \times 1ft.

ST JAMES' SCHOOL - OOZEBOOTH TERRACE

Scale 30 FT to 1 inch.



Room marked	Average height	Cubic feet.
1.....	24' 3" x 15' 4" x 15' 6"	= 5761
Do.	18' 4" x 15' 6" x 12' 6"	= 3552
Do.	44' 8" x 24' 3" x 15' 6"	= 16786
Do.	60' 3" x 20' 3" x 14' 0"	= 17080
Do.	9' 9" x 6' 0"	
Do.	17' 8" x 9' 3"	
Do.	17' 6" x 9' 3"	



The permanent outlet ventilation, as before mentioned, is an opening in the ceiling, or 288 sq. in.

Lighting. The lighting consists of three windows, 5ft. 6in. \times 3ft. 6in., or 57 sq. ft. in area, which is one-fifth of the floor space. The glass is transparent.

ROOM No. 4 (Infants).

There is only one room for infants, which has a separate entrance. It measures 60ft. 3in. \times 20ft. 3in., or 1,220 sq. ft. Three classes occupy this room. The average number present during June, 1903, was 85, viz., 43 boys and 42 girls; and the floor space, calculated on these numbers, allows 14.3 sq. ft. per head. The total cubic capacity is 17,080 cubic feet, or 200.9 cubic feet per head.

Ventilation. The permanent inlet ventilation is nil. The outlet ventilation consists of eight windows opening on hinges, without side shields, at 9ft. from floor; three openings in the ceiling, 3ft. \times 1ft., and two fire-places, with no fire-guards, in which fires are kept during cold weather.

There is cross ventilation.

The permanent outlet ventilation consists of three openings in the ceiling, and two open fire-places.

The total area of permanent outlet ventilation is 432 sq. in., this being equal to 5.0 sq. in. per head, exclusive of the fire-places.

Lighting. There are eight windows in this room. The glass is transparent. The total window area is 186 sq. ft., which is nearly one-seventh of the floor space.

The direction of the light is from the front and behind.

There are 20 naked gas jets in this room.

Recommendations.

- I. The ventilation openings should be improved where necessary.
- II. Room 1 should not contain more than 37 scholars.
- III. The sanitary conveniences should be lighted more efficiently by enlarging the ventilation openings.
- IV. The ceiling in the Infants' Room (No. 4) should be repaired.
- V. Fireguards should be provided in the Infants' Room.
- VI. Oozebooth Terrace should be repaired.

WHALLEY RANGE SCHOOL.

This school was erected in 1883, and is a stone and brick building of two storeys, and a gallery. The internal surfaces of the walls are pink-washed.

Externally the building is in good repair.

There is a ventilating turret in the centre of the roof.

Playgrounds.

There are two playgrounds, divided by a brick wall, and measuring 786 sq. yds. The whole surface is flagged, and on three sides it is above the level of the ground floor of the school. The playgrounds are enclosed on four sides. There is a dry area.

Sanitary Conveniences.

The sanitary conveniences consist of the pedestal type of w.c. but originally were McFarlane's. There are eight compartments for girls and infants (urinal 4ft.), five and a urinal (21ft.) for boys, and also separate accommodation for the male and female teachers. The conveniences are automatically flushed by three 30-gallon cisterns, and are situated twelve yards from the school.

Drainage.

The drainage, on inspection, was found to be defective.

Bad smells were complained of in the class-room of the Infant Department. The sanitary conveniences on inspection were found to be blocked. On breaking down to the drains, it was seen that they had been laid badly, and that their close proximity to the school was a source of danger. The type—McFarlane's—was unsuitable.

The drains were re-laid with cement joints, and connected to the Troy Street sewer, thus bringing their course in a more direct line, and away from the school. The conveniences were re-constructed on the combined type of pedestal and trough—earthenware,—each pedestal being separately sealed.

Before the re-construction of the above, the sanitary convenience for the use of teachers consisted of a vertical 9in. pipe directly connected to the drain. A board was fixed above, and there was no flushing apparatus.

Refuse

The dry refuse is collected in two tubs placed in a room inside the school at the Troy Street end, on the ground floor, leading to the heating apparatus. The floor of this room is unevenly paved with

bricks, and is level with, and in close proximity to the door leading to the infants' class and cloak rooms. Adjoining this room, and under the stairs leading to the room above, there is a water-closet (wash-out) which is inefficiently ventilated, and its floor is below the adjoining yard. There is also one lavatory basin in this room.

INFANT SCHOOLROOM.

There are five cloak-rooms for the infants.

Cloak-Room No. 8, at the Troy Street end, measures 20ft. x 8ft. 4in., is close to the school door, and lighted by three windows, which measure 7ft. 6in. x 2ft. 6in., three of which will open 2ft. 6in. x 1ft. 6in. at the top. One side is formed by a wooden partition about 6ft. 6in. in height. There are 32 pegs in this room. There is a fire-place, but no fire-guard.

There is no permanent inlet ventilation.

Cloak-Room No. 6 measures 20ft. 6in. x 14ft. 9in., and is situated on the playground side of the school. It is lighted by a large skylight and a window 6ft. x 2ft. 6in. There are two hopper ventilators in this window. The floor is below the level of the yard, and is formed of wooden blocks. The room is heated by hot water pipes, and that part of the wall abutting on the yard is boarded the whole height. The remaining walls are boarded to a height of 4ft. 6in. from the floor, and above this height they are pink-washed. There are no pegs in this room, which on visit was used as a class-room. The wall adjoining the yard is very damp, and a 3in. iron pipe which appears to be a downspout, passes through this room.

Cloak-Room No. 9 is situated at the Beaumont Terrace end of the School, and is 7ft. x 6ft. It is lighted by two windows, 4ft. x 2ft. 6in., which open one-third of their extent, and which are broken. The floor is flagged, and is below the level of the yard. There are two small areas, one in front of each window. The walls are boarded (5ft.). There are 58 pegs, and the room is heated by hot water pipes. There is a permanent ventilator in this room, 1ft. 1in. x 1ft. 4in.

Cloak-Room No. 2 is at the same end as No. 9, and is 14ft. x 7ft. 4in., lighted by two windows, 6ft. x 2ft. 6in., opening one-third of their extent. The floor is flagged, and the walls are boarded to a height of 4ft., and the remainder pink-washed. There are 38 pegs, and the room is heated by hot water pipes and radiators. One side is

formed of a partition of wood and glass. There is no permanent ventilation in this room.

Cloak-Room No. 1 is situated at the Beaumont Terrace end of the School, and bordering on Whalley Range. It is 14ft. 9in. x 7ft., and is lighted by two windows, 7ft. 6in. x 2ft. 6in., which open one-third of their area. The floor is flagged, and partly below the ground adjoining. The walls are boarded to a height of 5ft. from the floor, and the remainder plastered and pink-washed.

This room is heated by hot water pipes carried along the walls.

There are two lavatory iron basins in this room, one of which is not in use. The waste pipes from these basins appear to be directly connected to the drain.

There are 218 pegs in this room.

INFANTS' DEPARTMENT.

This Department consists of one large schoolroom, and a classroom.

The large room is divided into two portions by means of a roller shutter.

Walls.

The walls of these rooms internally are plastered and pink-washed, and they are boarded to a height of 4ft. 6in. from the floor, with light brown-coloured boards.

Floors.

The floors are composed of boards, except the floor of the classroom, which is formed partly of wooden blocks. The glass of the windows is semi-transparent at the lower panes.

There are no appearances of dampness.

The floors are swept daily, and washed once a year.

Heating.

The heating is effected by means of hot water pipes, and in some of the rooms by radiators.

There is a large ventilator in the roof of the School, outside, and two gratings at each gable-end.

Lighting.

The artificial lighting is by gas.

LARGE SCHOOLROOM No. 4 and 4a.

The average number present in these rooms during June, 1903, was 117.

The floor space measures 1,614 sq. ft., thus allowing 13.7 sq. ft. per head. The total cubic capacity is 20,581 cubic feet, or 175.9 cubic feet per head.

The Ventilation consists of two Tobin's tubes, 12in. x 6in. at a height of 7ft. from the floor, as inlet ventilators, and four small gratings in the walls, near the ceiling, as outlet ventilators, 9in. x 4in. Eight windows will open, but not as Sherringham hoppers.

There is no cross ventilation.

The total area of the permanent inlet ventilation is 144 sq. in., or an average of 1.2 sq. in. per head, and of the outlet ventilation 144 sq. in., or an average of 1.2 sq. in. per head.

Lighting. The light is from the left.

The total lighting area measures about one-ninth of the floor space.

CLASSROOM No. 5.

This room is used by the babies.

The average number present during June, 1903, was 47.

The floor space measures 425 sq. ft., thus allowing an average of 9.0 sq. ft. per head. The total cubic capacity is 5,419 cubic feet, or 115.3 cubic feet per head.

Ventilation. There is no permanent ventilation in this classroom.

Two of the windows are constructed on the hopper principle, opening 4ft. 6in. x 12in.

The Lighting of this room is from behind, and its area measures about one-fourth of the floor space. The glass is semi-transparent. On account of the area behind, this room is somewhat dark.

CLASSROOM No. 6.

(See Cloak-Room No. 6).

This room was built for a cloak-room, but is used as a reading classroom, and a class was present on visit.

The average number present in this room is 30.

The floor space measures 302.3 sq. ft., thus allowing 10 sq. ft. per head. The total cubic capacity is 3,856 cubic feet or 128.5 cubic feet per head.

Ventilation. There is no permanent ventilation in this room. Two Sherringham hoppers, 2ft. 6in. \times 9in., at a height of 6ft and 12ft. from floor are fixed in one window, and one-fourteenth of the sky-light has been made to open.

Lighting. The light of this room is from the right and above, the total lighting area being about one-third of the floor space.

This room has been described as Cloak-room No. 6; one wall is damp.

MIXED DEPARTMENT.

The Cloak-Room No. 6, for the boys, is situated at the Troy Street end of the school, and measures 16ft. 6in. \times 14ft., and the floor is partly level with the yard.

This room is lighted by three windows, each measuring 4ft. \times 3ft., and two are made to open. There is also one window 2ft. 9in. \times 3ft. 6in. opening into the staircase.

The floor is constructed of wooden blocks, and the walls are boarded to a height of 5ft. from the floor, the remainder being plastered and pink-washed.

The room is heated by hot water pipes.

There are 104 pegs. This room is damp on one side.

There is no special cloak-room for the girls.

Pegs are provided, some in the different class-rooms and some on the landing leading to the gallery class-room at the Terrace end of the school.

In Class-room No. 7 several pegs are missing.

Staircases.

There are three staircases, two of wood and one of stone.

The landing between the two flights of stone stairs is dark.

This department consists of seven rooms; one large room and six class-rooms, numbered respectively 1, 2, 3, 4, 5, 7 and 8.

Walls.

The internal surfaces of the walls are plastered and are pink-washed.

They are also covered with wood to a height of 4ft. 6in. from the floor.

This wood is of a dark brown colour.

Floors.

The floors of the rooms consist of boards, and are swept daily, and washed once a year.

Heating.

The heating is by means of hot water pipes. Radiators are fixed in some of the rooms.

Lighting.

The artificial light is by gas.
The windows are of plain glass.

Large Schoolroom No. 3.

The average number of children present in this room during September, 1903, was 105.

Three classes generally meet in this room.

The floor space measures 1,770 sq. ft., or an average of 16.8 sq. ft. per head. The total cubic capacity is 50,858 cubic feet, or 484.3 cubic feet per head.

Ventilation. The ventilation in this room is by means of ten windows, 2ft. 4in. x 2ft. 8in., which will open.

There are no permanent inlet ventilators.

The area of the permanent outlet ventilators, which are fixed in the roof (four in number, over the gas jets), is 1,800 sq. in., or an average of 17.1 sq. in. per head.

There is cross ventilation.

There are two windows on the Sherringham valve principle (outlets).

Light. The light is received from all sides. The total lighting area is about one-tenth of the floor space.

Classroom No. 4.

The average number present in this room during September, 1903, was 65.

The floor space measures 420 sq. ft., thus allowing 6.4 sq. ft. per head. The total cubic capacity is 6,728 cubic feet, or 103.5 cubic feet per head.

Ventilation. The ventilation of this room is by means of five windows, which are made to open, and two gratings in the wall, 8in. x 4in., fixed near the ceiling. Two windows act as hoppers, 2ft. 6in. x 9in., at a height of 5ft. 6in., and 11ft. from the floor.

The space made to open measures 29 sq. ft.

There are no permanent inlet ventilators, and the area of the permanent outlet ventilators measures 64 sq. in., or an average of 1 sq. in. per head. There is no cross ventilation.

Light. The light is from the right, and indirectly from the left through a partition, and the total lighting area measures about one-fifth of the floor space.

Part of the floor of this room is supported by an iron beam over a concreted area.

Roller shutters divide this room from No. 5.

Classroom No. 5.

The average number present in this room during September, 1903, was 60.

The floor space measures 420 sq. ft., or an average of 7.0 sq. ft. per head. The total cubic capacity is 6,728 cubic feet, or 112.1 cubic feet per head.

Ventilation. The ventilation in this class-room is the same as in class-room No. 4.

Light. The light is from the left, and the whole lighting area measures about one-sixth of the floor space.

Classroom No. 7.

The average number present in this room during September, 1903, was 35.

The floor space measures 295 sq. ft., thus allowing 8.4 sq. ft. per head. The total cubic capacity is 2,950 cubic feet, or 84.2 cubic feet per head.

Ventilation. This room is ventilated by means of three windows, which are made to open (two as hoppers, 2ft 3in. x 9in., at a height of 5ft. 6in., and 10ft. from the floor), and an open fire-place.

There are no permanent inlet ventilators in this room, and the permanent outlet ventilation consists of an open fire-place.

There is no cross ventilation.

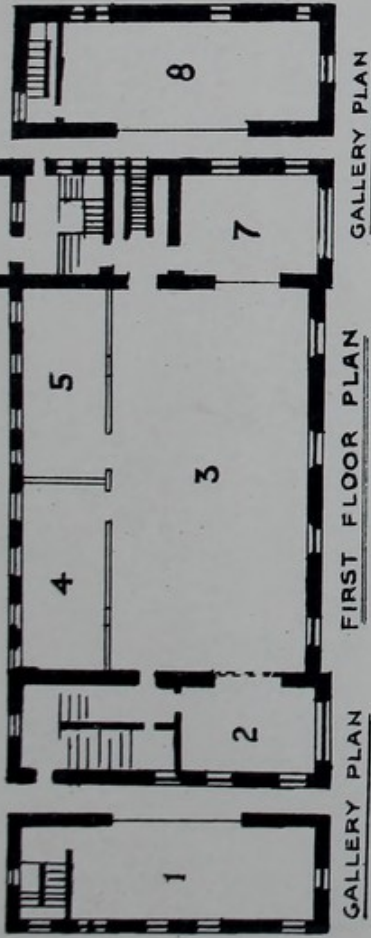
Light The light is from behind and the right, and the total lighting area measures about one-third of the floor space.

Classroom No. 2.

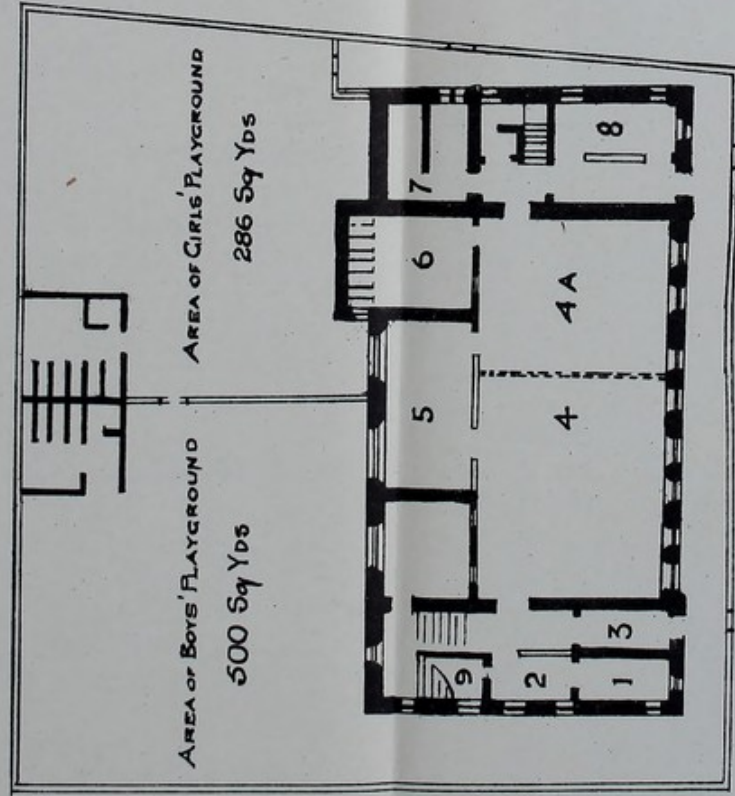
The average number present in this room during September, 1903, was 35.

—WHALLEY RANGE SCHOOL.—

Scale 30 FT to 1 inch.



Room marked	Average height.	Cubic feet.
1	37' 9" x 15' 6" x 15' 6"	9067
2	21' 0" x 14' 0" x 10' 0"	2940
3	58' 0" x 30' 6" x 28' 9"	50858
4	29' 0" x 14' 6" x 16' 0"	6728
5	29' 0" x 14' 6" x 16' 0"	6728
6	16' 6" x 14' 0" x 11' 9"	2714
7	20' 0" x 14' 9" x 10' 0"	2950
8	39' 8" x 15' 6" x 15' 6"	9528



Room marked.	Average height.	Cubic feet.
1	14' 9" x 7' 0" x 12' 9"	1316
2	14' 0" x 7' 4"	
3	14' 6" x 6' 6"	
4	36' 8" x 27' 9" x 12' 9"	12975
4A	21' 6" x 27' 9" x 12' 9"	7606
5	26' 2" x 16' 3" x 12' 9"	5419
6	20' 6" x 14' 9" x 12' 9"	3856
7	16' 6" x 14' 0"	
8	20' 0" x 8' 4" x 12' 9"	2123



The total floor area measures 294 sq. ft., or an average of 8.2 sq. ft. per head. The total cubic capacity is 2,940 cubic feet or 84.0 cubic feet per head.

Ventilation. This room is ventilated by means of three windows which are made to open.

There are no permanent inlet or outlet ventilators in this room.

There are two hoppers in one window measuring 2ft. 3in. \times 9in., at a height of 5ft. 6in., and 10ft. from the floor. One window also opens on hinges without side-shields at a height of 10ft.

There is no cross ventilation.

Light. The light is from the right and behind.

The total lighting area measures about one-third of the floor space. This is also used as a cloak-room.

Classroom No. 1.

This class-room is situated above class-room No. 2, and the floor is about 20ft. above the floor of the large schoolroom, No. 3, from the upper ceiling of which it is separated by roller shutters.

The average number present during September, 1903, was 80.

The floor space measures 585 sq. ft., or an average of 7.3 sq. ft. per head. The total cubic capacity is 9,067 cubic feet, or 113.3 cubic feet per head.

Ventilation. This room is ventilated by means of the windows which are made to open.

There is one Tobin's tube, 12in. \times 6in., at a height of 6ft. from the floor, and also a grating in the roof over the gas jets. The total area of the windows made to open measures 17 sq. ft.

The total permanent inlet area measures 72 sq. in., or an average of .9 sq. in. per scholar. The total permanent outlet area measures 432 sq. in., or an average of 5.4 sq. in. per head.

There is no cross ventilation.

Lighting. The light is from behind, and the total area measures about one-third of the floor area.

Classroom No. 8.

This class-room is situated at the opposite end of the School and is in the same position to the large schoolroom as class-room No. 1.

The average number present in this room during September, 1903, was 75.

The floor space measures 614 sq. ft., or an average of 8.1 sq. ft. per head. The total cubic capacity is 9,528 cubic feet, or 127 cubic feet per head.

Ventilation. This room is ventilated in the same way as Class-room No. 1.

Lighting. The light is from the left and behind, and the total area measures about one-sixth of the floor space.

Recommendations.

- I. To improve the conditions under which the dry refuse is stored.
- II. To provide inlet and outlet ventilation openings where they are deficient.
- III. To remove pegs from class-rooms and provide efficient cloak-room accommodation.
- IV. To ventilate the w.c. which is beneath the stairs adjoining Cloak-room No. 8.

ST. STEPHEN'S SCHOOL, Little Harwood.

This School, which is situated on the south side of Industrial Street, Little Harwood, has Mixed and Infants' Departments. The Mixed School was built in 1886, and the Infants' in 1895.

The building is of stone. The structure is in very good condition.

Playgrounds.

There are two playgrounds. The boys have a separate playground communicable with that for the girls and infants. The girls and infants use the same playground.

The boys' playground contains 1,260 sq. yds., of which about 100 sq. yds. are flagged. The flagged portion consists of a passage from the entrance to the mixed school to the sanitary conveniences, and about 9ft. wide, alongside these conveniences. The remainder of the yard is unflagged.

The playground for girls and infants measures about 1,000 sq. yds. About 200 sq. yds. are flagged, namely along the entrance of the infants' school, and the pathway to the sanitary conveniences.

There is a public playground immediately adjoining the school site, which is not enclosed.

There is no covered playground.

Sanitary Conveniences.

The sanitary conveniences originally were tub closets, but these have been converted, and the work is now completed. Boys', girls', and infants' conveniences are built in one line, and divided by means of a brick wall from floor to rafters.

The lighting is by means of thick glass placed in roof. Boys' and infants' conveniences have three lights in the roof. Girls' conveniences have four lights in the roof.

The walls of the compartments are carried up to about 7ft. from the floor. The face wall in front of the compartments supports the roof, and the passage in front of the compartments is not open to the air above.

The ventilation of the conveniences is good. There are wooden louvres in the face wall, and also ventilating openings above the compartments behind. There are two entrances to the boys' conveniences.

The sanitary conveniences are of the hopper type, fixed on an elliptical earthenware pipe. Each basin is flushed separately by an automatic cistern—boys' 20 gallons, infants' 20 gallons, and girls' 50 gallons.

The elliptical pipe is trapped at the end of the range of conveniences.

There are six urinals measuring 18 linear feet, the sides are constructed of slate, and the back of white glazed brick.

They are flushed by hand.

The boys' sanitary conveniences consist of six compartments and 18 linear feet of urinals; the girls' of eight compartments, and the infants of seven compartments and 8 linear feet of urinals.

The nearest school door to these conveniences is the infants', about 10 yds. away.

Drainage.

The drainage appears to be satisfactory. It runs through a chamber, and thence into the sewer. All the lavatory pipes discharge over gullies, and downspouts are directly connected.

Refuse. There is no provision for depositing the refuse.

Cloak-Rooms.

The boys' cloak-room is at the entrance of the mixed school. The floor is flagged, and the room is not warmed. There are about 70 hooks on wooden racks in the centre of the floor. In the cloak-room there are two white glazed lavatory basins, cased off, the waste pipes

of which discharge over a trapped gully in the yard. There are two windows in the room and one will open.

The girls use a small porch as a cloak-room at the entrance of the two class-rooms, Nos. 2 and 3. There are about 50 hooks on the walls of the porch. This porch is not heated.

The infants' cloak-room is situated at the entrance of the infants' school. The walls to a height of 5ft. from the ground, are constructed of white glazed brick, and above this height plastered, and painted a pea-green colour. There are 250 hooks, placed on three racks in the centre of the floor. There are three windows in this room, no portion of which has been made to open. There is an outlet ventilator in the ceiling, 3ft. x 1ft. 6in., partly blocked up with boards.

In this cloak-room are placed four white enamel wash-basins, cased off, and the waste pipes are made to discharge over a gully in the yard. Between rooms 1 and 4 is a small room containing a sink-stone for the use of teachers.

Walls.

The internal walls of the mixed school are boarded to a height of about 4ft. from the floor, and above this height rendered with plaster, and painted a salmon-pink colour.

The infants' school walls internally, are boarded to a height of 4ft. from the floor, and above this height plastered and painted a pea-green colour.

Floors.

The floors throughout the rooms are constructed of blocks rectangular in shape, and set on concrete. They are in good condition. There are two iron gratings in the floor of the mixed room and one in the infants' class-room, in order to carry the pipes from one room to the other; size of gratings in mixed room, 3ft. x 1ft. each, and in infants' room 6ft. x 1ft.

The floors are swept every night, and cleansed once a year.

Heating.

The heating of the school is carried out by means of hot water pipes placed round the rooms. In addition, there are fire-grates in the class-rooms of the mixed and infants' departments. There are two fire-guards for the mixed class-rooms, but none for the babies' room.

The artificial lighting is gas.

Large Room (Mixed School, 1).

There are five rooms in this school:—No. 1 is the large mixed schoolroom, Nos. 2 and 3 are class-rooms in the mixed school, No. 4 is a class-room for the infants, and No. 5 is the infants' large room.

This room measures 70ft. \times 30ft., or 2,100 sq. ft. of floor space, and the average number of children present during September, was 220, thus allowing 9.5 sq. ft. per head. The total cubic capacity is 46,200 cubic feet, or 210.0 cubic feet per head.

Ventilation. The ventilation of the large room consists of 12 window hoppers, which act as inlets, one outlet in the ceiling, about 3ft. \times 3ft., leading to a Boyle's ventilator on the roof, and one louvred opening in the gable-end (4ft. \times 4ft.).

There is cross ventilation.

There is no permanent inlet ventilation. The permanent outlet ventilation consists of one outlet in the ceiling, 3ft. \times 3ft., and one louvred opening in the gable-end, 4ft. \times 4ft., which is usually kept shut.

The total area of permanent outlet ventilation is 3,600 sq. in., thus allowing 16.3 sq. in. per head.

Lighting. The total lighting area measures 376 sq. ft., which is about one-fifth of the floor space.

The glass is transparent. The direction of the light is from behind and the left chiefly.

Classroom No. 2.

The floor area of this room is 520 sq. ft., and the average number of children attending during September, 1903, was 65, thus allowing 8 sq. ft. of floor space per head. The total cubic capacity is 8,320 cubic feet, or 128 cubic feet per head.

Ventilation. There are two hopper windows and two hinge windows; one outlet opening in the ceiling 2ft. \times 1ft., and an open fire-place, with guard.

There is slight cross ventilation.

There is no permanent inlet ventilation, and the permanent outlet ventilation consists of an opening in the ceiling 2ft. \times 1ft., and an open fire-grate. The total area of permanent outlet ventilation (not calculating the fire-place), is 288 sq. in., thus allowing 4.4 sq. in. per head.

Lighting. The total lighting area of this room is 89 sq. ft., consisting of three windows; this is equal to one-sixth of the floor space.

The direction of the light is from behind and the left.

Classroom No. 3.

This room measures 26ft. \times 20ft., or 520 sq. ft., and the average number of children attending during September, 1903, was 70, thus allowing 7.4 sq. ft. per head. The total cubic capacity is 8,320 cubic feet, or 118.8 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows and two hinge windows, one outlet in the ceiling, 2ft. \times 1ft., and an open fire-place, with guard.

There is slight cross ventilation.

There is no permanent inlet ventilation in this room, and the permanent outlet ventilation consists of an opening in the ceiling (2ft. \times 1ft.), and an open fire-grate. The total area of permanent outlet ventilation (not calculating the open fire-grate) is 288 sq. in., thus allowing 4.1 sq. in. per head.

INFANTS' ROOM (Classroom 4).

This room measures 28ft. 1in. \times 27ft. 2in., or 763 sq. ft., and the average number of children present during June, 1903, was 44, thus allowing 17.3 sq. ft. per head. This room contains a gallery, used by the babies. The total cubic capacity is 13,732 cubic feet, or 312.1 cubic feet per head.

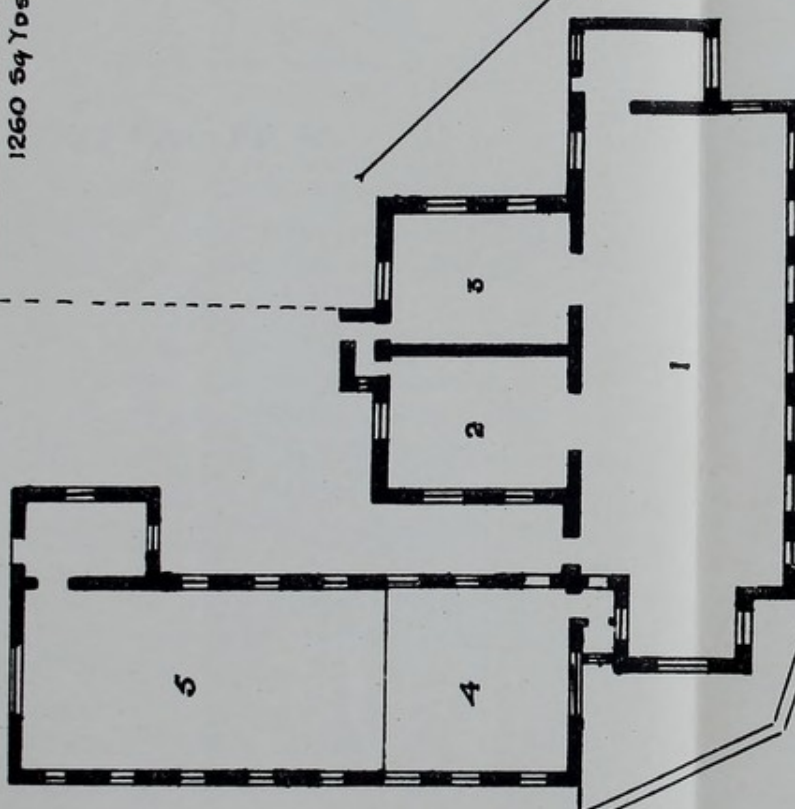
Ventilation The ventilation consists of six windows opening on hinges. Three inlets on the Tobin's tube principle have 72 circular holes in the top of each box, each $\frac{1}{4}$ in. in diameter, the whole of the three inlets having an area of 10.5 sq. in. The air which comes through the tubes is warmed by passing the hot water pipes, before coming into the room. The outlet ventilation consists of one permanent grating in the ceiling, over the gas pendant (3ft. \times 1ft. 6in., or 648 sq. in. in area), and an open firegrate. There is no fireguard.

The permanent inlet ventilation consists of five Tobin tube-like inlets, having an area of 10.5 sq. in., or .2 sq. in. per head, and the permanent outlet ventilation consists of one perforated grating in ceiling over gas pendant, or 648 sq. in.—14.7 sq. in. per head.

CHURCH HILL

AREA of GIRLS PLAYGROUND
1000 Sq Yds

AREA of BOYS PLAYGROUND
1260 Sq Yds.



Room marked,	Average height, feet.	Cubic feet.
1	70' 0" x 30' 0" x 22' 0"	= 46200
2	26' 0" x 20' 0" x 16' 0"	= 8320
3	26' 0" x 20' 0" x 16' 0"	= 8320
4	28' 1" x 27' 2" x 18' 0"	= 13732
5	52' 0" x 27' 2" x 18' 0"	= 25428

— ST. STEPHEN'S SCHOOL —

- LITTLE HARWOOD -

Scale 30 feet to 1 inch



This permanent ventilation is admitted from outside, 6in. from floor; each ventilator is about 9in. \times 2in., or 18 sq. in., therefore the ventilator outside has a greater area than the inlet inside.

Lighting. The total lighting area of this room is 200 sq. ft., this being nearly one-fourth of the floor-space. Thirty-eight sq. ft. of the 358 will open for ventilation.

The glass is transparent, and light is derived from all sides.

Large Room No. 5.

This room measures 52ft. \times 27ft. 2in., or 1,412 sq. ft., and the average number of infants present during June, 1903, was 111, thus allowing 12.7 sq. ft. of floor space per head. The total cubic capacity is 25,428 cubic feet, or 229.0 cubic feet per head.

Ventilation. The ventilation consists of ten window openings, without side shields, and nine Tobin tube-like inlets, which have an area of 30 sq. in. These tubes are the same as those in No. 4 Room.

The outlet openings consist of one perforated grating in the ceiling, 3ft. \times 2ft.—area, 864 sq. in.; one opening leading to a Boyle's cowl on the roof, 4ft. \times 4ft., and another opening in the ceiling, 1ft. 6in. \times 1ft., or 216 sq. in.

The permanent inlet ventilation consists of nine tubes, having an area of 30 sq. in., and the permanent outlet ventilation of the three openings in the ceiling has an area of 3,384 sq. in.

The permanent inlet ventilation is equal to .3 sq. in. per head, and the permanent outlet ventilation to 30.4 sq. in. per head.

Lighting. The total lighting area is 320 sq. ft., which is equal to one-fourth of the floor space

The light is from behind, front, and left.

Recommendations.

- I. The permanent inlet ventilation openings should be improved where necessary.
- II. The girls' cloak-room should be improved.
- III. A fire-guard should be provided in the babies' room.
- IV. Rooms 1, 2, and 3 should not contain more than 210, 52 and 52 scholars, respectively.

ST. MICHAEL'S SCHOOL.

This school consists of infants' and mixed departments. It is a two-storey building of brick, and is in fairly good condition. It was erected about 1860, the 1st floor in 1871, class-rooms in 1881, and cloak-rooms in 1896.

Playgrounds

There are two playgrounds, one for boys', measuring 475 sq. yds., and one for girls and infants, 340 sq. yds. They are separated from each other; the surfaces are well flagged, and slope to an opening in the boundary wall, which allows the surface water to flow into the lodge behind. Thirteen steps lead down to both playgrounds.

Sanitary Conveniences.

The sanitary conveniences consist of earthenware troughs, which are situated in the separate playgrounds. There are six compartments for the boys, three on one side and three on the other side, opposite each other. Three of these are constructed in a recess under the upper playground, and each recess measures 3ft. to seatboard and is 3ft. wide, but one compartment has a space behind the seatboard about 3ft. wide; the three compartments on the opposite side measure 3ft. 6in. to seatboard, and are 2ft. 6in. wide. There is a passage down the centre open to the external air. These compartments are not well lighted.

The girls have seven compartments, four on one side and three on the other side with a passage down the centre, open to the external air. These compartments are the same size as those for the boys. The girls' compartments under the recess are well ventilated and lighted.

The six w.c.'s under the upper playground (three for boys, and three for girls) are flushed by one cistern, and the seven on the other side (three for boys, and four for girls) by another cistern. These sanitary conveniences are flushed once a day.

There are 7 linear feet of urinals for the boys. The backs are constructed of cement to a height of 4ft., and the sides of stone. They are situated in a recess under the upper playground. The floor is flagged, and a channel has been formed leading to a properly trapped gully.

Drainage.

The drainage appears to be satisfactory. The drainage from the sanitary conveniences discharges through a trap near the girls' conveniences. The lavatory waste pipes are directly connected to the drain.

Cloak-Rooms.

There are two cloak-rooms; one for the infants, and one for the mixed school. The infants' cloak-room is situated on the right, at the entrance. It measures 20ft. x 14ft., and is lighted by two windows, 7ft. x 3ft. 4in., having an area of 46 sq. ft. The cloak-room is warmed by hot water pipes. There are about 98 hooks placed on racks and against the walls.

The mixed cloak-room is immediately over the infants' cloak-room and porch. It measures 23ft. 3in. x 21ft. 8in., and is lighted by five windows (upper hoppers). There are four inlet tubes, 5in. x 13in., and four outlet ventilators near the ceiling, 12in. x 9in. The cloak-room is warmed by hot water pipes. There are about 190 hooks, placed on racks and against the walls.

There is one stone staircase, with three flights, and handrail.

Lavatory Accommodation.

There is one lavatory basin cased-off in the infants' cloak-room, and the waste pipe is directly connected to the drain. There is one lavatory wash-basin in the mixed cloak-room.

Walls.

The walls are boarded to a height of 3ft. from the floor, and painted a brown colour; the walls above this height are rendered with plaster, and painted brown for 2ft. above the boards, and above this height pink colour-washed.

Floors.

The floors are constructed of tongued and grooved boards, with a cavity underneath. The floors on the upper storey are worn.

They are swept daily and washed yearly.

Heating.

The heating is carried out by means of hot water pipes placed round the rooms.

Ground Floor.

This floor is used by the infants only. There are three rooms in constant use, and one is used occasionally.

No. 1 Room

This is the infants' large room, measuring 49ft. 8in. \times 32ft., or 1,589 sq. ft., and the average number of infants present during July was 31, thus allowing 51.2 sq. ft. of floor space per head. The month of July has been taken for the attendance as the Infants' Department was closed during June. The total cubic capacity is 22,780 cubic feet, or 734.8 cubic feet per head.

Ventilation The ventilation consists of five swivel windows, 3ft. 10in. \times 2ft. 2in. each; five box tubes at a height of 5ft. to 6ft. from the floor, the grating outside measuring 2ft. \times 6in., and the perforated zinc over box inside the room measuring 3ft. 2in. \times 8in.; one grating in the chimney-breast, 4in. \times 4in.; two in outer wall, close to ceiling, 4in. \times 4in., and two in inner wall (discharging into cavity), 4in. \times 4in.

The permanent outlet ventilation consists of five gratings, 4in. \times 4in.—one in chimney-breast, two in outer wall, and two in cavity wall. The total area of permanent outlet ventilation is 80 sq. in.—thus allowing 2.6 sq. in. per head.

The permanent inlet ventilation consists of five box tubes, or 1,520, or 1,520 sq. in., thus allowing 49.0 sq. in. per head. The measurements of the tubes inside the rooms have been calculated.

Lighting. The total lighting area is 116 sq. ft., which is equal to one-thirteenth of the floor space, but which appears to be sufficient under existing conditions.

The windows consist of squares, 1ft. \times 8in.

The light is from behind and the right.

There are 23 gas jets.

No. 2 Classroom.

This room measures 24ft. 6in. \times 16ft. 9in., or 410 sq. ft., and the average number of infants present during July, 1903, was 34, thus allowing 12.0 sq. ft. of floor space per head. The total cubic capacity is 5,745 cubic feet, or 168.9 cubic feet per head.

Ventilation. The ventilation consists of two swivel windows, 3ft. 10in. \times 2ft. 0in.; three box tubes, 2ft. 0in. \times 6in., external opening; one grating in chimney-breast, 8in. \times 8in., and an open fire-grate, with no guard.

The permanent inlet ventilation consists of three box tubes, or 532 sq. in., thus allowing 15.6 sq. in. per head.

The permanent outlet ventilation consists of one grating in the chimney, or 64 sq. in., thus allowing 1.8 sq. in. per head.

Lighting. The total lighting area is 50 sq. ft., which is equal to one-eighth of the floor space.

The light is from the left.

There are four naked gas jets.

No. 3 Room.

This room measures 20ft. 4in. \times 16ft. 9in., or 340 sq. ft.; and the average number of children present during July was 33, thus allowing 10.3 sq. ft. of floor space per head. The total cubic capacity is 4,768 cubic feet, or 144.4 cubic feet per head.

Ventilation. The ventilation consists of two swivel windows, 3ft. 10in. \times 2ft. 0in.; three box tubes, 2ft. 0in. \times 6in. (external opening); one grating in chimney-breast, 8in. \times 8in., and an open fire-grate, with guard.

The permanent inlet ventilation consists of three box tubes, or 532 sq. in., thus allowing 16.1 sq. in. per head.

The permanent outlet ventilation consists of one grating in the chimney-breast, or 64 sq. in., thus allowing 1.9 sq. in. per head. per head.

Lighting. The total lighting area is 50 sq. ft., which is equal to one-sixth of the floor space.

The light is from the right and indirectly from the left.

There are four gas jets.

FIRST FLOOR.

There are four rooms on the first floor.

No. 5 Room.

This is the large room for the mixed scholars; it measures 48ft. 6in. \times 32ft. 0in., or 1,552 sq. ft., and the average number of scholars present during September, 1903, was 105, thus allowing 14.7 sq. ft. of floor space per head. The total cubic capacity is 23,538 cubic feet, or 224.1 cubic feet per head.

Ventilation. The ventilation consists of six windows, opening on swivels, 3ft. 10in. \times 2ft. 2in.; five box tubes, two openings in ceiling, 3ft. \times 1ft. 0in., an open fire-grate, and one opening, 4in. sq., in chimney breast.

The permanent inlet ventilation consists of five box tubes, or 1,520 sq. in., thus allowing 14.4 sq. in. per head.

The permanent outlet ventilation consists of two openings in ceiling, and one in chimney-breast, or 880 sq. in., thus allowing 8.3 sq. in. per head.

Lighting. The total lighting area is 156 sq. ft., which is equal to one-ninth of the floorspace. Indirect light is also received through the glass partition which is 32 ft. wide, and also through windows over doorways into the class-rooms.

No. 6 Room.

This room measures 24ft. 6in. \times 16ft. 9in., or 410 sq. ft., and the average number of scholars present during September, 1903, was 45, thus allowing 9.1 sq. ft. of floor space per head. The total cubic capacity is 5,880 cubic feet, or 130.6 cubic feet per head.

Ventilation. The ventilation consists of two windows, opening on swivels, 3ft 10in. \times 2ft. 0in.; three box tubes, one grating in chimney-breast, 8in. \times 8in. There is also an open fire-place.

The permanent inlet ventilation consists of the three box-tubes, or 532 sq. in., thus allowing 11.8 sq. in. per head.

The permanent outlet ventilation consists of one grating in the chimney-breast, or 64 sq. in., thus allowing 1.4 sq. in. per head. per head.

Lighting. The total lighting area is 50 sq. ft., which is equal to one-eighth of the floor space.

The light is from the left.

There are four gas jets.

No. 8 Room.

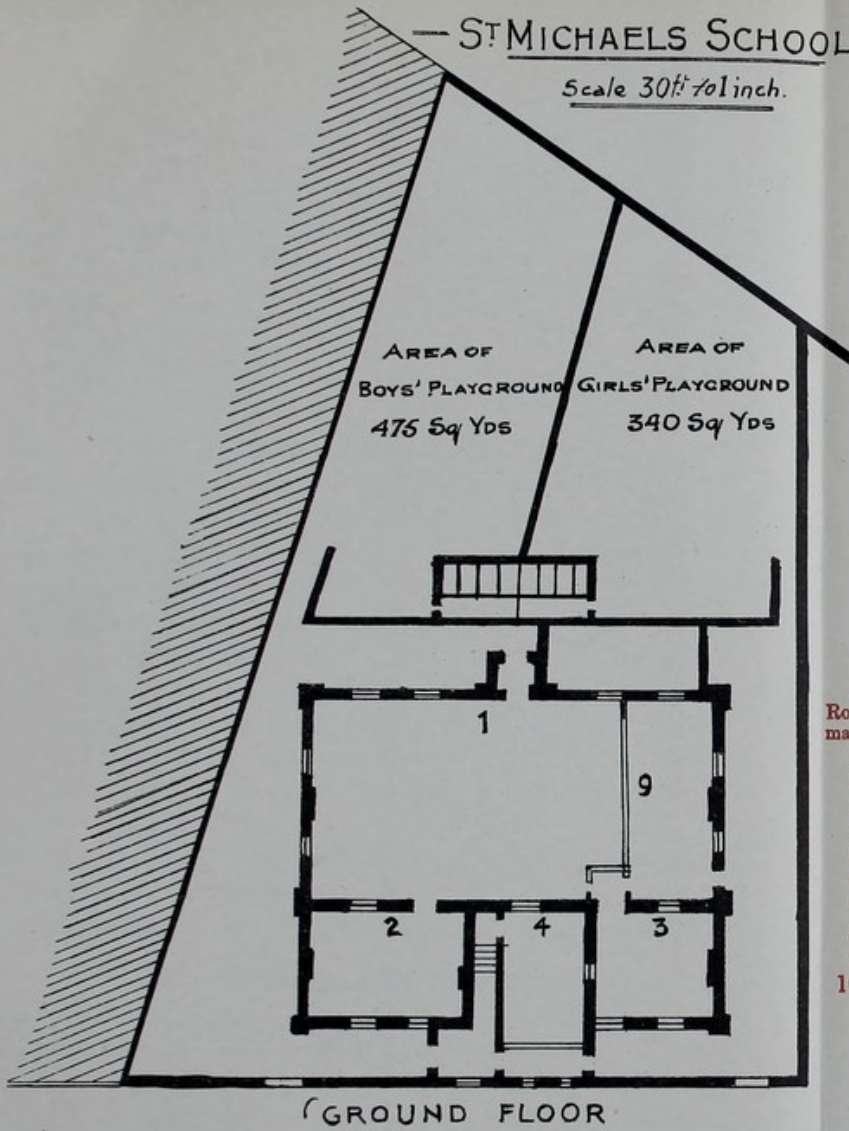
This room measures 25ft. \times 16ft. 9in., or 418 sq. ft., and the average number of scholars present during September, 1903, was 36, thus allowing 11.6 sq. ft. of floor space per head. The total cubic capacity is 6,002 cubic feet, or 166.7 cubic feet per head.

Ventilation. The ventilation consists of two windows, opening on swivels, 3ft. 10in. \times 2ft. 0in.; three box tubes, one grating in chimney-breast, 8in. \times 8in.

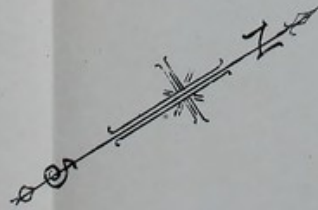
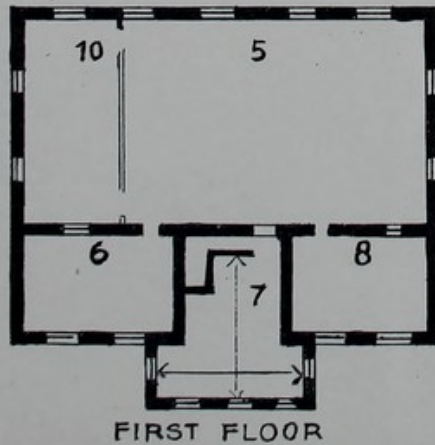
The permanent inlet ventilation consists of the three box tubes, or 532 sq. in., thus allowing 14.8 sq. in. per head.

— ST MICHAELS SCHOOL. —

Scale 30ft = 1 inch.



Room marked	Average height.	Cubic feet.
1.....	49' 8" x 32' 0" x 14' 4"	= 22780
2.....	24' 6" x 16' 9" x 14' 0"	= 5745
3.....	20' 4" x 16' 9" x 14' 0"	= 4768
4.....	20' 0" x 14' 0"	
5.....	48' 6" x 32' 0" x 15' 2"	= 23538
6.....	24' 6" x 16' 9" x 14' 4"	= 5880
7.....	23' 3" x 21' 8" x 12' 0"	= 6045
8.....	25' 0" x 16' 9" x 14' 4"	= 6002
9.....	15' 10" x 32' 0" x 14' 4"	= 7252
10.....	15' 4" x 32' 0" x 15' 2"	= 7441





The permanent outlet ventilation consists of one grating in chimney-breast, or 64 sq. in., thus allowing 1.8 sq. in. per head. There is also an open fire-place.

Lighting. The total lighting area is 50 sq. ft., which is equal to one-eighth of the floor space.

The light is from the left.

There are four gas jets.

No. 9 Room (Ground Floor).

This room is only used temporarily; it measures 15ft. 10in. \times 32ft. 0in., or 506 sq. ft., and the average number of scholars who use this room is 28.2, thus allowing 18.0 sq. ft. of floor space per head. The cubic capacity is 7,252 cubic feet, or 259 cubic feet per head.

Ventilation The ventilation consists of two box tubes; three windows, opening on swivels, 3ft. 10in. \times 2ft. 2in.; an open fire-grate, and one opening in chimney-breast, 4in. \times 4in.

The permanent inlet ventilation consists of two box tubes, or 304 sq. in., thus allowing 10.8 sq. in. per head.

There is one permanent outlet ventilator, in chimney-breast, 16 sq. in., or .5 sq. in. per head.

Lighting. The total lighting area is 70 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left and behind.

No. 10 Room (1st Floor).

This is a mixed class-room, measuring 15ft. 4in. \times 32ft. 0in., or 490 sq. feet, and the maximum number of scholars present in this room during September, 1903, was 58, thus allowing 8.4 sq. ft. of floor space per head. The total cubic capacity is 7,441 cubic feet, or 128.2 cubic feet per head.

Ventilation. The ventilation consists of two box tubes, 2ft. 8in. \times 8in., and one box tube, 3ft. 6in. \times 8in.; one outlet in ceiling, 3ft. 0in. \times 1ft. 0in.; one opening in chimney-breast, 4in. \times 4in.; and three window openings, 3ft. 10in. \times 2ft. 2in.

The permanent inlet ventilation consists of three box tubes. The total area of permanent inlet ventilation is 848 sq. in., thus allowing 14.6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, and one opening in chimney-breast, or 448 sq. in., thus allowing 7.7 sq. in. per head.

Lighting. The total lighting area is 70 sq. ft., which is equal to one-seventh of the floor space.

The light is from the right and behind.

Recommendations.

- I. That the spaces behind the seatboards of the sanitary conveniences be cut off.
- II. That the outlet ventilation openings be improved, where necessary.
- III. That the lighting in No. 1 Room on the ground floor, be improved when the whole room is used.
- IV. That Rooms 6 and 10, on the first floor, should not contain more than 41 and 49 scholars respectively.

HIGHER GRADE SCHOOL.

CONVENT OF NOTRE DAME.

This school was erected in 1901, and is a one-storey building of brick.

There is a Boyle's ventilator in the roof over the main schoolroom.

Playground.

There is one playground, measuring about 700 sq. yds., 58 sq. yds. of which are covered. The surface of the latter is concreted.

Sanitary Conveniences.

The sanitary conveniences are of the trough syphon type, and are situated 35 yds. from the school, with an open passage in front, 4ft. in breadth, the wall facing the passage being 7ft. 6in. in height.

There are four compartments for girls and four for infants. The conveniences are flushed three times a day by means of a 30-gallon cistern.

Refuse.

The dry refuse is stored in an ashpit, away from the school, in the Convent grounds.

Walls.

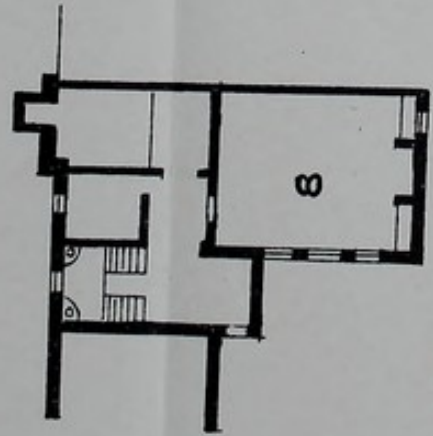
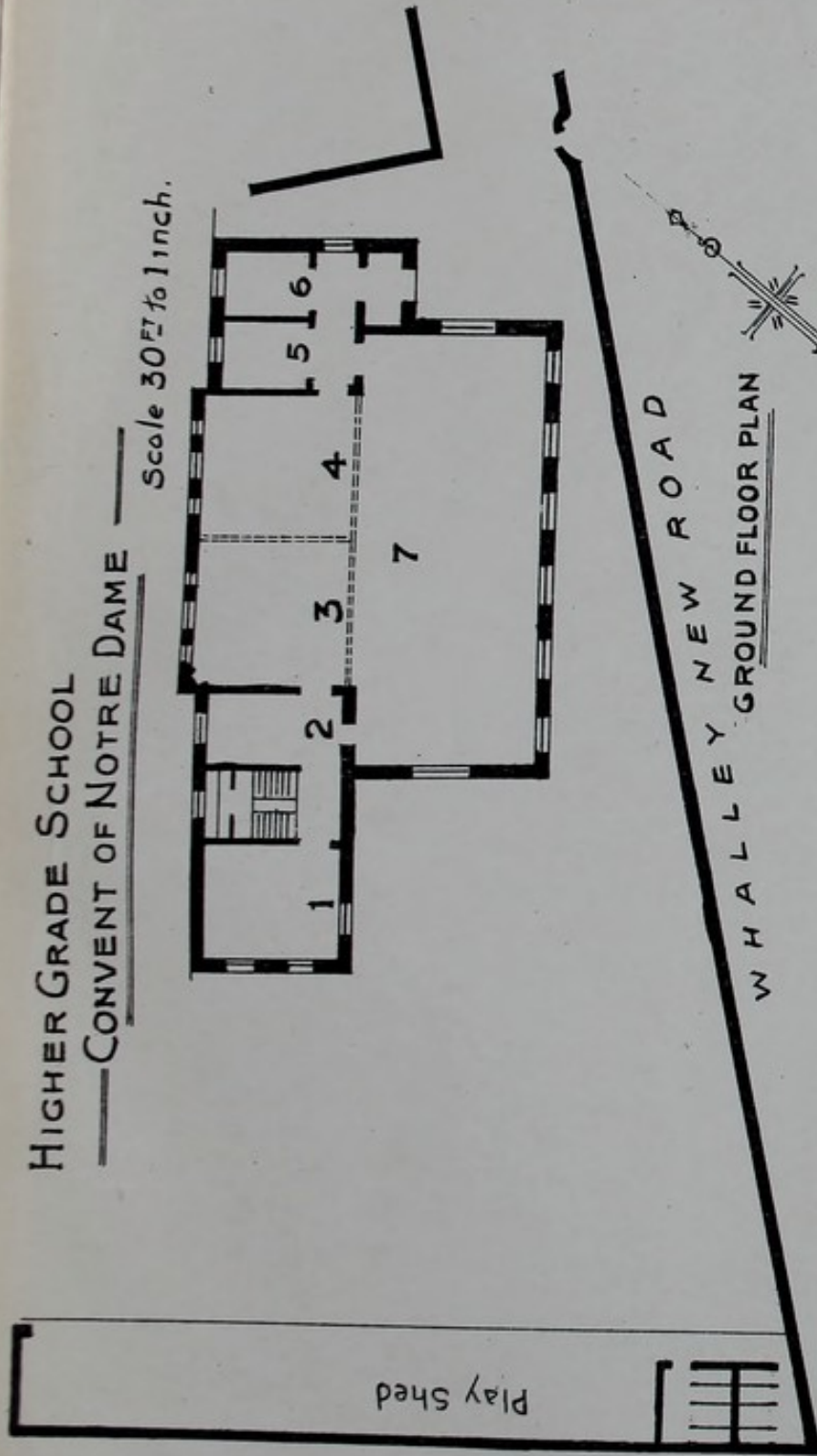
The internal surfaces of the walls are plastered, and have not yet been coloured.

The walls are boarded and coloured green to a height of 4ft. 6in. from the floor.

HIGHER GRADE SCHOOL

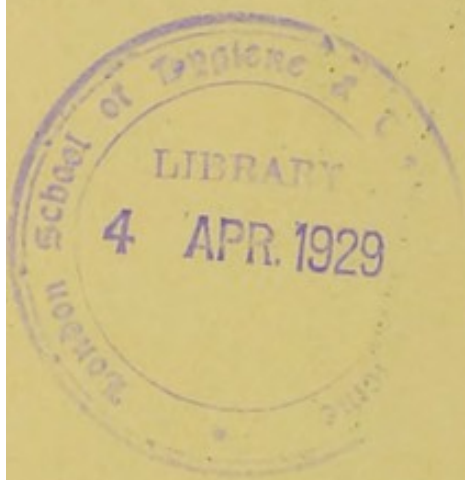
CONVENT OF NOTRE DAME

Scale 30 FT to 1 inch.



BASEMENT PLAN

Room marked	Average height.	Cubic feet.
1	17' 10" x 15' 4" x 11' 2" =	3037
2	12' 2" x 8' 10" x 11' 2" =	1183
3	20' 4" x 19' 0" x 14' 1" =	5436
4	20' 4" x 19' 0" x 14' 1" =	5436
5	10' 9" x 8' 10" x 11' 3" =	1057
6	10' 9" x 8' 10" x 11' 3" =	1057
7	57' 2" x 24' 6" x 17' 11" =	25093
8	24' 5" x 18' 9" x 10' 4" =	4729



Floors.

The floor is boarded, the glass in the windows is semi-transparent, and the panes are small.

The floors are swept daily, and washed three times a year.

Heating.

The heating is effected by means of hot water pipes and radiators. There are fire-places in the class-rooms, but these are not used for heating purposes.

The school is lighted by electric light.

The partitions between the class-rooms are of glass and wood.

There are two cloak-rooms; one situated at the main entrance, and the other near the stone steps leading to the cooking school.

There are 100 pegs in each room. These rooms are heated by hot water pipes, and are lighted, each by a window 4ft. x 3ft. 6in.

There is no permanent inlet or outlet ventilation. There are four white enamelled lavatory basins in landing leading to the cooking school, the waste pipe discharging over a gully outside.

This School consists of one large schoolroom and three class-rooms.

Large Schoolroom No. 7.

The average number present in this room during September, 1903, was 88.

The total floor space measures 1,400.5 sq. ft., or an average of 15.9 sq. ft. per scholar. The total cubic capacity is 25,093 cubic feet, or 285.1 cubic feet per head.

Lighting. The total lighting area measures 307 sq. ft., or about one-fourth of the floor space.

The light is from the right, behind, and the left.

Ventilation. The ventilation is by means of a portion of all the windows being made to open, but not as hoppers, and two outlet ventilators, 2ft. x 1ft., in the ceiling, having an area of 576 sq. in., or an average outlet area of 6.5 sq. in. per scholar.

There are no permanent inlet ventilators.

Classroom No. 4.

The average number present in this room during July, 1903, was 20.

The total floor space measures 386.4 sq. ft., or an average of 19.6 sq. ft. per scholar. The total cubic capacity is 5,436 cubic feet, or 271.8 cubic feet per head.

Lighting. The total lighting area measures 50 sq. ft., or about one-seventh of the floor space.

The light is received from the left, and from the right through a partition.

Ventilation. There is no permanent inlet ventilation. One open fire-place acts as the outlet, and has no guard.

Classroom No. 3.

Is the same as No. 4, and is used by the infants.

Classroom No. 1.

The average number present in this room during September, 1903, was about 30. This room is used in connection with the large school-room for reading.

The total floor space measures 273 sq. ft., or an average of 9 sq. ft. per scholar. The total cubic capacity is 3,037 cubic feet, or 101.2 cubic feet per head.

Lighting. The total lighting area measures 67 sq. ft., or about one-fourth of the floor space.

The light is from the left, and behind.

Ventilation. There is no permanent inlet ventilation. One open fire-place acts as the outlet.

Cooking School.

This room is situated partly below the floor of the main school-room.

Recommendation.

- I. To improve the ventilation openings where they are deficient.

MOSS STREET SCHOOL.

This School was erected in 1881, and is a one-storey building of stone.

The building is in good repair, and there are no signs of dampness.

Playgrounds.

There are three playgrounds, which are flagged; one for boys, and two for the girls and infants. A portion of each playground is covered. The playgrounds are separated by a stone wall.

The boys' playground measures 932 sq. yds., and in addition 102 sq. yds. are under cover.

The girls' and infants' playgrounds measure, together, 584 sq. yds., in addition to 96 sq. yds. which are covered.

Sanitary Conveniences.

The sanitary conveniences are of the pedestal and trough syphon type, with an open passage in front, 3ft. wide, the wall facing the passage being more than 7ft. in height.

There are six compartments, and a urinal, with flushing apparatus, for the boys (20 linear feet.).

There are six compartments for the girls and infants. A urinal, without flushing apparatus, has been provided for the latter.

The conveniences are situated in the yard, at a distance of 3ft. from the school for manual training, and a distance of 27 yds. from the day school.

These conveniences are flushed once a day by means of a 30-gallon cistern for each set.

One of the boys' conveniences is for the use of the male teachers, and one of the girls' for the female teachers.

Refuse.

The dry refuse is deposited in two iron receptacles fixed under the covered parts of the yard, which are emptied from outside, and not through the yard.

GIRLS' SCHOOL.

The internal walls are plastered, and coloured chocolate, green, and white. This applies to all the rooms.

The heating is effected by means of hot water pipes.

The floors in some rooms are constructed of wooden blocks, and in others of boards.

The artificial light is gas.

The glass in the windows is plain, with the exception of the lower panes, which are semi-transparent.

The cloak-room for the girls, No. 17, is situated between the day school and the manual training school. It measures 23ft. x 12ft. 9in., and is lighted by means of a skylight having an area of 80 sq. ft., and a small window in the wall, having an area of 4½ sq. ft.

The floor is tiled, and the internal walls are plastered and coloured the same as the school walls.

This room is ventilated by one outlet in the roof, 18 sq. in. It is heated by means of hot water pipes carried around the walls.

There are 281 pegs, arranged on racks.

There are four white enamelled lavatory basins in this room, the waste pipes from which are joined to one common pipe, which is not trapped, but discharges over a gully outside.

Adjoining this cloak-room there is a small cloak-room for the girls who attend the manual training school, 13ft. \times 5ft. (54 pegs).

This cloak-room communicates with a covered passage, which leads from the school to the yard.

This passage is lighted by the same skylight, as that which is in the girls' cloak-room.

The classrooms, No. 13 in the girls school and No. 4 in the boys' school, receive light and ventilation, indirectly, from this passage.

The girls' schoolrooms consist of one large room, and three classrooms, numbered 12, 11, 13, and 15 on the plan.

Room No. 12.

The floor is formed of wooden blocks. It is swept daily, and washed twice a year.

The average number present in this room during September, 1903 was 112.

The total floor area measures 1,118 sq. ft., or an average of 9.9 sq. ft. per scholar. The total cubic capacity is 26,832 cubic feet, or 239.5 cubic feet per head.

Lighting. The total area of light is 174 sq. ft., or about one-sixth of the floor space.

The light is on one side.

Ventilation. The ventilation is by means of three window-sill inlets, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., at a height of 4ft. 6in. from the floor, and three circular outlets (12in. diameter), in the roof having an area of about 339 sq. in.

There are three windows which will open in which there are six Sherringham hoppers, opening 24in. \times 6in. at a height of 5ft 6in. and 7ft. 6in. from the floor.

The total permanent inlet area measures 78 sq. in., which is equal to .7 sq. in. per head. The total permanent outlet area measures 339 sq. in., allowing 3 sq. in. per head.

There is no cross ventilation.

Room No. 15.

The average number present in this class-room during September, 1903, was 42.

The total floor space measures 667 sq. ft., thus allowing 15.8 sq. ft. per scholar. Part of this room is in the form of a gallery, the floor of which is ventilated. The total cubic capacity is 16,008 cubic feet, or 381.1 cubic feet per head.

Lighting. The total lighting area measures 164 square feet, or about one-fourth the floor space.

The light is from behind and the right.

Ventilation. The ventilation is by means of four window-sill ventilators, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in.; two 4 in. \times $3\frac{1}{2}$ in., and eight gratings in gallery fronts, $7\frac{1}{2}$ in. \times $6\frac{1}{2}$ in.; and two 4 in. \times $3\frac{1}{2}$ in. (inlets), two outlet ventilators in the ceiling, 12 in. in diameter, and an open fire-place.

There are five Sherringham hoppers, 24 in. \times 6 in.; three 1 ft. 10 in. \times 1 ft. 10 in., opening on hinges, and one 2 ft. \times 2 ft., opening on swivel.

The total permanent inlet ventilation measures 544 sq. in., or an average of 12.9 sq. in. per scholar. The total permanent outlet area measures 226 sq. in., allowing 5.4 sq. in. per scholar.

The ventilation is partly cross.

There is a glazed sink in this room, the waste pipe from which discharges over a gully outside.

Classroom No. 13.

This class-room is only used occasionally.

The average number present is about 30.

The total floor space measures 252 sq. ft., or an average of 8.4 sq. ft. per scholar. The total cubic capacity is 6,048 cubic feet, or 201.6 cubic feet per head.

Lighting. The total lighting area measures 74 sq. ft., or about one-third of the floor space.

Ventilation. The ventilation consists of two window-sill inlet ventilators $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., and one outlet ventilator in the ceiling, 12 in. in diameter.

Two windows are made to open, in which there are four Sherringham hoppers, 23 in. \times 6 in., at a height of 5 ft. 6 in. and 8 ft., one hinged window 1 ft. 10 in. \times 1 ft. 10 in., and one swivel window, 2 ft. \times 2 ft.

The total permanent inlet ventilation measures 52 sq. in., or an average of 1.7 sq. in. per scholar. The total permanent outlet ventilation measures 113 sq. in., or an average of 3.7 sq. in. per scholar.

There is no cross ventilation.

Classroom No. 11.

The average number present in this room during September, 1903, was 43.

The floor is boarded, and the total area measures 625 sq. ft., or an average of 14.5 sq. in. per head. The total cubic capacity is 9,375 cubic feet, or 218.0 cubic feet per head.

Lighting. The total lighting area measures 94 sq. ft., or about one-sixth of the floor space.

The light is from the left, and behind.

Ventilation. This room is ventilated by means of two Tobin's tube inlet ventilators, 20in. x 8in., having an area of 320 sq. in., at a height of 6ft. from the floor, and four outlet ventilators in the roof, 12in. x 10in.

Three windows are made to open, in which there are three Sherringham hoppers, and two hinged windows, 3ft. 0in. x 2ft. 3in. each, at 15ft. from floor.

The total permanent inlet ventilation measures 320 sq. in., which is equal to 7.4 sq. in. per scholar.

The total permanent outlet ventilation measures 480 sq. in., giving an area of 11 sq. in. per scholar.

MOSS STREET SCHOOL (Infants).

The cloak-room for the infants is situated at the Moss Street end of the school and numbered 10 on the plan.

This room is 15ft. 9in. x 9ft.

The floor is flagged. The room is lighted by a window 11 sq. ft., and is ventilated by an outlet in the roof. The window will open.

There are 164 pegs fixed on the walls, and are very close together. Adjoining this room there is a pedestal wash-down closet for the use of the teachers, which is lighted by a window 5ft. 6in. x 1ft., and ventilated by an outlet in the roof.

The Infant Department consists of three rooms, numbered 7, 8 and 9 on the plan.

The floors of these rooms are of wooden blocks.

Room No. 7.

The average number present in this room during June, 1903, was 149. The total floor area measures 1,050 sq. ft., allowing an area of 7 sq. ft. per scholar. The total cubic capacity is 25,200 cubic feet, or 169.1 cubic feet per head.

Part of the floor is constructed as a gallery.

Lighting. The total lighting area measures 168 sq. ft., or about one-sixth of the floor area.

The light is received from the front and behind.

Ventilation. This room is ventilated by means of two window-sill inlet ventilators, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., and five gratings in gallery fronts, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., but there is only one grating outside, 6 in. \times 6 in. supplying these five inlets, and two outlet ventilators in the roof, 12 in. in diameter.

There are three windows made to open, in which there are seven Sherringham hoppers, 14 in. \times 6 in., at a height of 6 ft. and 9 ft. from the floor, four opening on hinges at about 20 ft. from floor.

The total permanent inlet ventilation measures 182 sq. in., giving an average of 1.2 sq. in. per scholar. The total area of the permanent outlet ventilation measures 226 sq. in., giving an average of 1.5 sq. in. per scholar.

Room No. 8.

The average number present in this room during June, 1903, was 65.

The total floor space measures 743 sq. ft., allowing 11.4 sq. ft. per scholar. The total cubic capacity is 17,820, or 274.1 cubic feet per head.

Lighting. The total lighting area measures 144 sq. ft., or about one-fifth the floor space.

The light is from the left and right.

Ventilation. This room is ventilated by means of two window-sill inlet ventilators, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., two 4 in. \times $3\frac{1}{2}$ in., and two outlet roof ventilators, 12 in. in diameter. There are four Sherringham hoppers, 24 in. \times 6 in., at a height of 6 ft. and 9 ft. from the floor, four opening on hinges at 20 ft. from floor, and two casement windows, 3 ft. 9 in. \times 1 ft. 10 in., at 4 ft. from floor.

The total permanent inlet ventilation measures 80 sq. in., or an average of 1.2 sq. in. per scholar. The total permanent outlet ventilation measures 226 sq. in., or an average of 3.4 sq. in. per head.

Room No. 9.

The average number present in this room during June, 1903, was 68.

The total floor area measures 654 sq. ft., allowing 9.6 sq. ft. per scholar. The total cubic capacity is 13,095 cubic feet, or 192.5 cubic feet per head.

Lighting. The total lighting area measures 191 sq. ft., or about one-third of the floor space.

The light is from behind, left, and right.

Ventilation. The ventilation consists of four window-sill inlet ventilators, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., and two outlet ventilators in the roof, 12 in. in diameter. There are four windows opening on hinges.

The total permanent inlet ventilation area measures 104 sq. in., or an average of 1.5 per scholar. The total permanent outlet ventilation area measures 226 sq. in., or an average of 3.3 sq. in. per scholar.

MOSS STREET SCHOOL (Boys).

The boys' cloak-room adjoins the cloak-room for the girls, No. 6, and is situated between the day school and the school for manual training.

Lighting. This room is 18 ft. \times 13 ft., and is lighted by means of a skylight and window in the wall giving an area of light of about 60 sq. ft., or nearly one-fourth of the floor space.

The floor is tiled, and the walls are plastered, and coloured chocolate, green, and white.

This room is heated by means of hot water pipes carried along the walls.

Ventilation. The room is ventilated by an outlet in the roof. There are 200 pegs, arranged on racks.

There are five white enamelled lavatory basins, the waste pipe being common and discharging over a gully. One basin is provided with hot and cold water.

The cloak-room opens to a passage leading to the yard and school, which passage is lighted by a skylight, not made to open.

This School consists of one large school-room, and three classrooms, numbered on the plan, 1, 2, 3, and 4.

LARGE SCHOOLROOM No. 2.

The average number present in this room during September, 1903, was 91.

The total floor area measures 1,125 sq. ft., or an average of 12.3 sq. ft. per scholar. The total cubic capacity is 25,875 cubic feet, or 284.3 cubic feet per head.

Lighting. The total lighting area measures 174 sq. ft., or about one-sixth of the floor space.

The light for two classes is from behind, and for another class from the left.

Ventilation. This room is ventilated by means of three window-sill permanent inlets, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., and one permanent outlet 18 in. \times 12 in., and three circular openings in ceiling, 12 in. in diameter.

There are three windows made to open, in which there are six Sherringham hoppers, 24 in. \times 6 in., three acting as outlets and three as inlets, and one window opening on a hinge, at about 23 ft. from floor.

The total permanent inlet measures 78 sq. in., or an average of .8 sq. in. per scholar.

The total permanent outlet area measures 555 sq. in., or an average of 6.1 sq. in. per scholar.

There is no cross ventilation.

Classroom No. 3.

The average number present in this room during September, 1903, was 44.

The total floor area measures 661 sq. ft., allowing 15.0 sq. ft. per scholar. The total cubic capacity is 15,208 cubic feet, or 345.4 cubic feet per head.

Lighting. The total lighting area measures 164 sq. ft., or about one-fourth the floor space.

The light is from the left, and behind.

Ventilation. The ventilation is by means of four window-sill ventilators, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., and two 4 in. \times $3\frac{1}{2}$ in.; two outlet ventilators in the roof, 12 in. in diameter, and an open fire-place.

Three windows are made to open, in which there are six Sherringham hoppers, 24 in. \times 6 in., and one opening on hinges at about 20 ft. from the floor.

The total permanent inlet ventilation measures 132 sq. in., or an average of 3.0 sq. in. per scholar.

The total permanent outlet ventilation measures 226 sq. in., or an average of 5.1 sq. in. per scholar.

There is slight cross ventilation.

Classroom No. 4.

The average number present in this room during September, 1903, was 20.

The total floor space measures 252 sq. ft., or an average of 12.6 sq. ft. per head. The total cubic capacity is 5,796 cubic feet, or 298.8 cubic feet per head.

Lighting. The total lighting area measures 74 sq. feet., or more than one-third of the floor space.

The light is from behind and left.

Ventilation. The ventilation is by means of two window-sill inlet ventilators, $7\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., and one outlet ventilator in the ceiling, 12 in. in diameter.

Two windows are made to open, in which there are four Sherringham hoppers, one opening on hinges, 24 in. \times 6 in., and one opening on swivel, 3 ft. \times 2 ft.

The total permanent outlet ventilation measures 113 sq. in., or an average of 5.6 sq. in. per scholar.

The total permanent inlet ventilation measures 52 sq. in., or 2.6 sq. in. per head.

Classroom No. 1.

The average number present in this room during September, 1903, was 35.

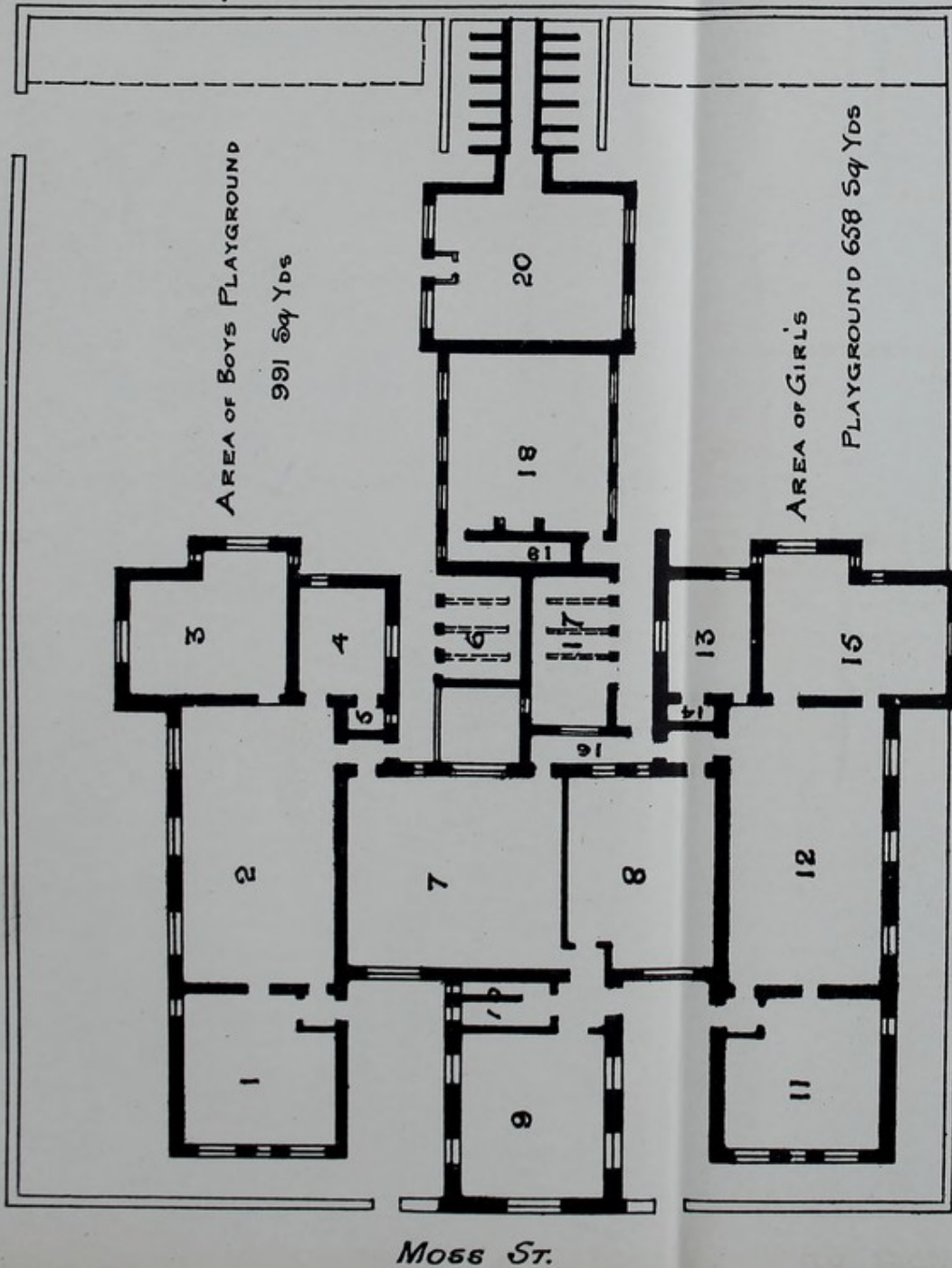
The total floor space measures 625 sq. ft., allowing an average of 17.8 sq. ft. per scholar. The total cubic capacity is 8,750 cubic feet, or 250.0 cubic feet per head.

Lighting. The total lighting area measures 94 sq. ft., or about one-sixth of the floor space.

The light is received from the right, and slightly from behind.

Ventilation. This room is ventilated by means of two Tobin's tube inlet ventilators, having an area of 178 sq. in. each, at a height of 5 ft. 6 in. from the floor, and four outlet ventilators in the roof, 12 in. \times 10 in. Two windows open on hinges.

- Moss St. School -



Room marked.	Average height, feet	Cubic feet
1... 25' 0" x 25' 0" x 14' 0"	= 14' 0"	= 8750
2... 45' 0" x 25' 0" x 23' 0"	= 23' 0"	= 25875
3... 28' 9" x 23' 0" x 23' 0"	= 23' 0"	= 15208
4... 18' 0" x 14' 0" x 23' 0"	= 23' 0"	= 5796
5... 8' 0" x 4' 6"		
6... 18' 0" x 13' 0"		
7... 35' 0" x 30' 0" x 24' 0"	= 24' 0"	= 25200
8... 30' 0" x 24' 9" x 24' 0"	= 24' 0"	= 17820
9... 27' 0" x 24' 3" x 20' 0"	= 20' 0"	= 13095
10... 15' 9" x 9' 0"		
11... 25' 0" x 25' 0" x 15' 0"	= 15' 0"	= 9375
12... 44' 9" x 25' 0" x 24' 0"	= 24' 0"	= 26832
13... 18' 0" x 14' 0" x 24' 0"	= 24' 0"	= 6048
14... 8' 6" x 4' 3"		
15... 29' 0" x 23' 0" x 24' 0"	= 24' 0"	= 16008
16... 13' 0" x 5' 0"		
17... 23' 0" x 12' 9"		
18... 25' 0" x 29' 0" x 15' 0"	= 15' 0"	= 10875
19... 17' 0" x 3' 9"		
20... 30' 9" x 24' 6" x 15' 0"	= 15' 0"	= 11305

CLINTON ST.

Scale 30 feet to 1 inch

Three windows are made to open, in which there are three Sheringham hoppers, 24in. x 6in.

The total area of permanent inlet ventilation measures 356 sq. in., or an average of 10 sq. in. per scholar.

The total permanent outlet ventilation measures 480 sq. in., or an average of 13.7 sq. in. per scholar.

There is slight cross ventilation.

Recommendations.

- I. To construct the skylight over the passage leading to the girls' cloak-room so that it will open; louvres being used.
To effect a similar improvement in the boys' cloakroom.
- II. To improve the ventilation openings where necessary.
- III. To arrange that No. 7 in the Infant School shall not contain more than 116 scholars.
- IV. To improve the lighting of No. 12 Room.

SACRED HEART,

ST. SILAS'S ROAD.

This School was built in 1900, and is situated in St. Silas' Road. It is built of brick, and is in very good condition.

Playgrounds.

There are two playgrounds attached to the school. The boys' playground is separated from the girls'. The boys' playground measures 345 sq. yards; 166 sq. ft. of this being flagged, the remainder unflagged. The portion which is flagged is in front of the entrance to the School.

The girls' playground measures 976 sq. yards. No portion of this is flagged.

The surface slopes to the school from behind, and an area has been provided near the school.

Sanitary Conveniences.

The sanitary conveniences are placed behind the school, 20yds. away.

The type is Merrill's trough system (brown earthenware).

These conveniences are flushed automatically by a 20-gallon cistern, three times a week.

There are two compartments for boys, and 4¹/₂ linear feet of urinals. These urinals are constructed of stone sides and back; they have not a smooth surface, and the flushing is carried out by hand.

There are two conveniences for infants, and 4¹/₂ linear feet of urinals. The construction of this urinal is exactly the same as that for the boys.

There are three compartments for the girls. These conveniences are particularly clean; they are well constructed, well ventilated and lighted. There is also a pedestal w.c. adjoining the girls closets, which is used by the teachers. There is also a pedestal closet in cellar. The compartment is lighted by a window, 3ft. 4in. × 1ft. 2in., but it is not ventilated, and the window does not open. The soil-pipe is 4in. in diameter, and is carried up full bore outside, 12in. above the eaves.

Drainage.

The drainage appears to be in perfect order. There is a ventilating shaft carried up above the eaves. All downspouts discharge over gullies. All gullies are properly trapped. The lavatory waste pipes are not trapped.

Refuse.

All the refuse is placed in an ash-pit provided for the purpose, adjoining the boys' conveniences. It is a properly covered receptacle.

Cloak-Rooms.

Three cloak-rooms are attached to this School.

The Boys'

The boys' cloak-room, No. 1, is in the west entrance, and measures 12ft. × 10ft. 6in. It is lighted by means of a window 8ft. × 5ft. 3in., part of which opens for ventilation. The floors are constructed of concrete, and the walls of brick.

The room is warmed by means of hot-water pipes.

There are 35 hooks placed on one rack in the centre of the floor, and on the walls. Each peg is numbered.

The Girls'

The girls' cloak-room, No. 8, is situated on the left side of the east entrance. The room measures 12ft. 6in. × 8ft. It is lighted by means of two windows, 8ft. × 3ft. 6in., or 56 sq. ft., of which 3ft. 1in. × 3ft. 6in., or 21.6 sq. ft., are made to open for ventilation. There is also an air brick, 7¹/₂in. × 4¹/₂in. placed in the wall as an inlet ventilator.

This cloak-room is warmed by hot water pipes.

The floor is constructed of concrete, the walls of brick.

There are 71 hooks, placed in a rack in the centre of the floor and on the walls, and each hook is numbered.

The Infants'

The infants' cloak-room, No. 4, is situated on the right of the east entrance, opposite the girls'. This room measures 10ft. 3in. \times 8ft., it is lighted by means of two windows, 8ft. \times 3ft., or 48 sq. ft., of which 3ft. 1in. \times 3ft. 6in., or 21.6 sq. ft., will open for ventilation.

This cloak-room is warmed by hot water pipes.

The floor is constructed of concrete, and the walls of brick.

There are 46 hooks, placed on a rack in the centre of the floor and against the walls, and each peg is numbered.

There is a lavatory basin in each of the above cloak-rooms. The waste pipes are not trapped, and discharge over gullies.

There are three rooms in this school: No. 3 is used by the babies; Nos. 2 and 7 are "Mixed" rooms.

The internal walls are boarded, up to a height of 4ft. 6in. from the floor; above this height the walls are rendered with plaster, but they are not painted. The colour of the walls is light grey. There is no appearance of any dampness.

Floors.

These floors are boarded, with a cavity underneath, which is ventilated.

They are swept daily, and washed three times a year.

Heating.

The heating of the rooms is carried out by means of hot water pipes placed round the rooms, and in room No. 1, there is an open fire-grate, with fire-guard, in addition to the pipes.

Classroom No. 3.

This room is used for the babies (gallery).

The floor space is 360 sq. ft. The average number of children present during the month of June, 1903, was 22, thus allowing almost 16.4 sq. ft. of floor space per head. The total cubic capacity is 5,230 cubic feet, or 237.7 cubic feet per head.

Ventilation. The ventilation of this room consists of the following: Four swivel windows, 3ft. 1in. \times 1ft. 9in.; two permanent warm-air inlets, one 20in. \times 9in. and the other 20in. \times 6½in. The air

is warmed by passing over the hot water pipes cased in an iron chamber, and is delivered in an upward direction, 4ft. from the floor. There are also two Tobin's tubes, 9in. x 3in., one iron perforated grating in wall, close to ceiling, 12in. x 12in., and an open firegrate, with suitable fireguard.

The total area of the permanent inlet ventilation is 364 sq. in., or 16.5 sq. in. per head; this does not include the open fire-grate.

The total area of the permanent outlet ventilation is 144 sq. in., or 6.5 sq. in. per head; this does not include the open fire-grate.

Lighting. The lighting of No. 3 Room is as follows:—There are two external windows in the room, but it also derives light from the large room, indirectly, through the window in the large room. The total area of the external light is 84 sq. ft., or one-fourth of the floor space.

The glass used in this room for lighting is chiefly transparent. The lower panes are of thick glass.

The direction of the light is from the left, and, indirectly, from the right, through the window between this room and No. 7 Room.

No. 7 Room (Large Mixed).

This room has a floor area of 823 sq. ft., and the average attendance of children during the month of September, 1903, was 49; Males 24, Females 25., thus allowing 16.7 sq. ft. of floor space per head. The total cubic capacity is 11,525 cubic feet, or 235.2 cubic feet per head.

Ventilation. The ventilation of the large room consists of the following:—Three warm-air inlets similar to those in Room No. 3, 20in. x 9in.; five Tobin's tubes, 9in. x 3in.; eight swivel windows, 3ft. 1in. x 1ft. 9in., and two outlets in ceiling of perforated iron gratings, 12in. x 12in.

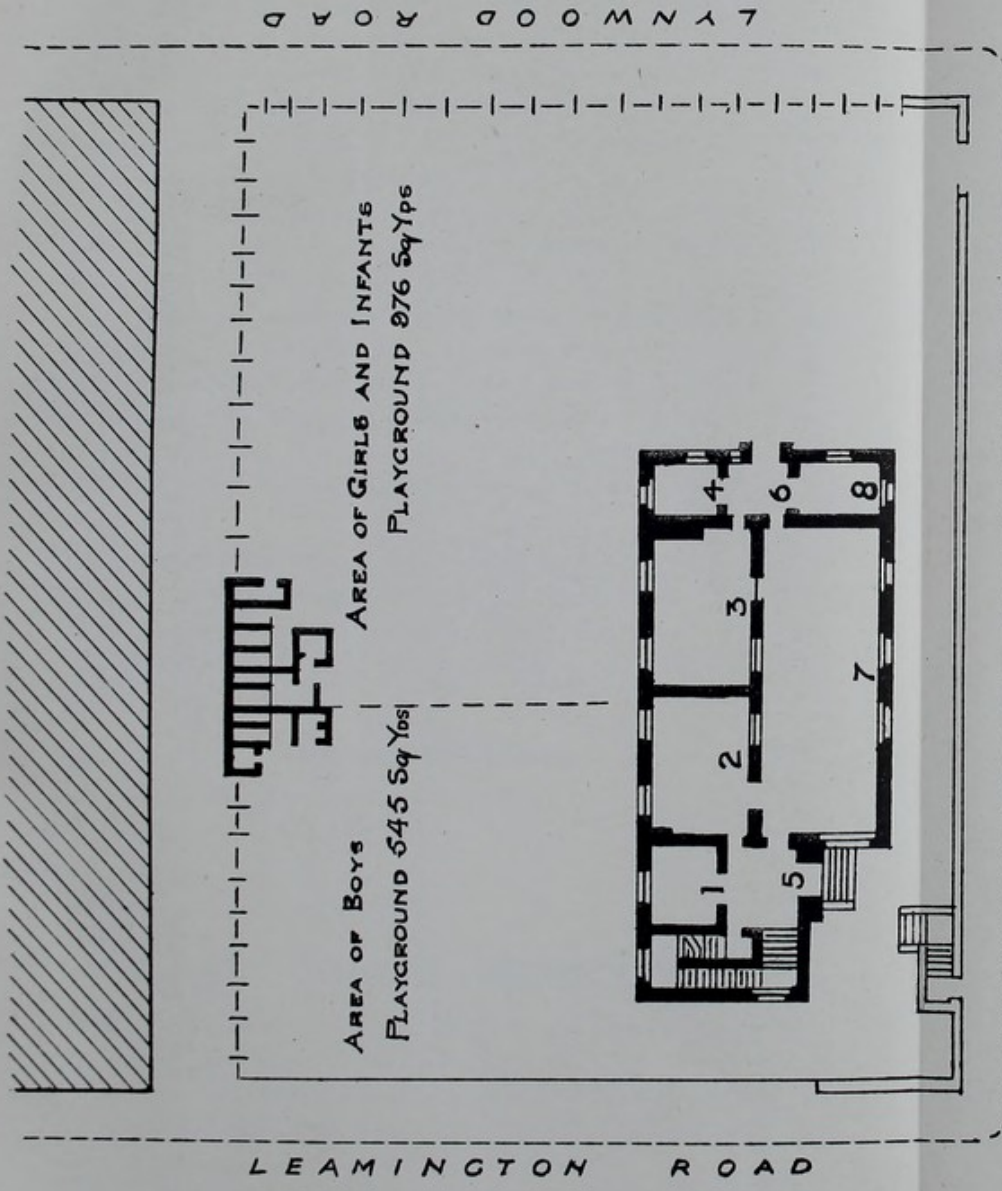
The permanent ventilation is as follows: Three warm-air inlets, 20in. x 9in.; five Tobin's tubes, 9in. x 3in., and two outlets in ceiling, 12in. x 12in.

The total area of the permanent inlet ventilation is 675 sq. in., or 13.7 sq. in. per head.

The total area of the permanent outlet ventilation is 288 sq. in., or 5.8 sq. in. per head.

Lighting. The lighting is as follows:—

The total area of light is 168 sq. ft., which is equal to almost one-fifth of the floor space.



ST SILAS ROAD
 SCHOOL OF THE SACRED HEART - ST SILAS ROAD.
 Scale 30 FT to 1 inch.

Room marked	Average height.	Cubic feet.
1...	12' 0" x 10' 6" x 14' 0" =	1764
2...	21' 1" x 14' 10" x 14' 0" =	4376
3...	24' 4" x 14' 10" x 14' 6" =	5230
4...	10' 3" x 8' 0" x 14' 0" =	1148
5...	12' 0" x 9' 9" x 14' 0" =	1638
6...	9' 7" x 8' 0" x 14' 0" =	1073
7...	46' 2" x 17' 10" x 14' 0" =	11525
8...	12' 6" x 8' 0" x 14' 0" =	1400



The direction of the light is from behind, and the left, and slightly in front.

Classroom No. 2 (Mixed).

The floor area of this room is 312 sq. ft., and the average number of children present during September, 1903, was 25—males 14, females 11—thus allowing 12.5 sq. ft. per head. The total cubic capacity is 4,376 cubic feet, or 175 cubic feet per head.

Ventilation. There are four swivel windows, 3ft. 1in. x 1ft. 9in., which act as inlet ventilators.

There is one warm-air inlet, 20in. x 9in., and two Tobin's tubes, one 9in. x 3in., and one 6in. x 3in. One perforated grating in the west wall, 12in. x 12in., is an outlet.

The permanent ventilation consists of one warm-air inlet, or 180 sq. in. in area; two Tobin's tubes, or 45 sq. in. in area, and one outlet in wall close to ceiling, or 144 sq. in. in area.

The total permanent inlet ventilation is 225 sq. in., or 9 sq. in. per head.

The total permanent outlet ventilation is 144 sq. in., or 5.7 sq. in. per head.

Lighting. The total area of light is 84 sq. ft., which is equal to nearly one-fourth of the floor space.

The glass is the same as described in Room No. 3.

The direction of the light is from the right, and, indirectly, from the left.

Recommendations.

- I. That the cellar w.c. be ventilated.
- II. That waste pipes be trapped.

ST. JOHN'S SCHOOLS.

The Boys' and Infants' Departments are in one school, and the Girls' in another school in Bicknell Street.

The Boys' and Infants' School is a two-storey building, situated at the junction of Bold Street and Altom Street. The front and sides are built of brick, and the back of stone rubble.

The School was erected in 1844.

Playgrounds.

There are three playgrounds, each completely separated from the other.

The boys' measures 337 sq. yds., infants' 428, and girls' 272 sq. yds.

The surfaces of the playgrounds are well flagged, and slope to surface gullies.

The infants' playground is on the same level as the school.

In each of the playgrounds there is a drinking fountain and cup, for the use of the scholars.

There is a passage from Room No. 9 to No. 10 in girls' school, which is covered by a glazed roof, which can be used as a covered playground.

There is no covered playground for boys or infants.

Sanitary Conveniences.

The boys' sanitary conveniences are situated near the Men's Club-room in Bold Street. They consist of six compartments measuring 2ft. 9in. to seatboard, and are 2ft. 5in. wide. There is a passage in front of the conveniences, 3ft. 4in. wide, open to external air. The compartments are well ventilated.

The conveniences are earthenware troughs, flushed twice a day by a 60-gallon automatic flush cistern.

Urinal.

There are 15 linear feet of urinal accommodation opposite the compartments, and near the gable-end of the Men's Club, open to the external air. The backs are rendered with cement to a height of 3ft. from the floor, and a stone 1ft. in thickness above the cement; the sides are constructed of stone. The flushing is carried out by hand.

The floors of the sanitary conveniences are constructed of concrete, and slope towards the stone channel in urinal.

Infants' Sanitary Conveniences.

There are four compartments for the infant boys, and four for the infant girls, separated from each other by a division wall. The compartments measure 3ft. to seatboard, 2ft. 5in. wide, and are well ventilated. There is a passage in front of the compartments, 4ft. 0in. wide, open to external air.

The type of the sanitary conveniences is the same as the boys, and they are flushed by two 30-gallon cisterns; one for each set.

Infant Boys' Urinals.

The infant boys' urinals are constructed in the passage opposite the compartments, near the face wall, which is 6ft. 6in. high, and open to external air. There are $11\frac{1}{2}$ linear feet. The backs are constructed of cement, the sides of stone, and they are flushed by hand.

The floors of the sanitary conveniences are concreted, and slope towards the channel in the urinal.

Girls' Sanitary Conveniences

There are nine sanitary conveniences for the girls; five on one side and four on the other side, with a passage down the centre, 3ft. wide, and open to external air. The construction and type of these sanitary conveniences is the same as that for the infants. The five conveniences are flushed by a 60-gallon automatic cistern, and the set of four by a 30-gallon cistern. They are situated near the yard wall of No. 31 Bicknell Street.

Drainage.

The drainage appears to be satisfactory. The drainage from each set of sanitary conveniences discharges through a trap and chamber.

Refuse.

There is a dry ash-pit constructed near the infants' conveniences adjoining the boiler-house. The ash-pit measures 8ft. \times 7ft. \times 4ft., or 224 cubic feet. It is emptied from the infants' playground.

Staircases.

There are two staircases, well-lighted, stone steps, no hand-rail, two flights.

Cloak-Rooms.

There are two cloak-rooms for the infants, one at the entrance to the west staircase, and one at the entrance to the east.

East Cloak-Room.

This room is marked No. 5 on the plan, measures 14ft. 9in. \times 13ft. 9in., and can be entered from schoolroom entrance to staircase, and from playground. It is lighted by one window, 7ft. 10in. \times 3ft. 10in. and 2ft. 2in. \times 1ft. 10in. will open at the top for ventilation.

The walls are boarded to a height of 6ft.; above this height they are plastered and painted. The floors are flagged, and the room is warmed by hot water pipes.

There are 200 hooks, numbered, placed on racks and against walls.

West Cloak-Room.

The construction of this cloak-room is the same as the east cloak-room. There are 212 hooks placed on racks, and against the walls.

Boys' Cloak-Room.

The boys' cloak-room (No. 1) is situated immediately over the infants' west cloak-room; it measures 18ft. 2in. \times 15ft., and is lighted by two windows, 7ft. 10in. \times 3ft. 10in., two panes opening on hinges, 2ft. 2in. \times 1ft. 10in.; one ventilation opening in ceiling 2ft. \times 1ft. 6in.

The walls are boarded to a height of 5ft., and above this height they are plastered and painted. The floor is boarded.

The cloak-room is warmed by a fire-place, with a fireguard attached.

There are 351 pegs, on five racks and against the walls.

Girls' Cloak-Room.

This room is marked No. 8 on plan, measures 34ft. 3in. \times 6ft. 9in. The whole of the roof is constructed of thick semi-transparent glass. It is entered by two doors, one from the schoolroom, and one from the playground. The floor is boarded, and the walls are boarded up to the glazed roof. This roof encloses part of two windows in class-room 9. One window in the roof will open.

There are 369 pegs, placed on racks and against the walls, and each peg is numbered.

Lavatory Accommodation.

There are two white glazed lavatory basins in the small place adjoining the infant cloakroom, and underneath the west staircase, and also underneath east staircase. These two places are lighted by small window, 2ft. 10in. \times 3ft. 2in., no part of which is made to open.

The waste pipes are trapped, and discharge over gullies in the yard. These lavatories are used by the infants.

There are two white glazed lavatory basins used by the boys in their cloak-room. The wastepipes are not trapped, discharge over hopper head, and then over a gully in yard.

There is also a brown and white glazed sink in Class-room No. 5, 1st floor, the waste pipe of which is not trapped, and discharges into downspout, the downspout discharging over a gully.

There are three white glazed lavatory basins, and an iron enamel sink, used by the girls in their cloak-room. The waste pipes are not trapped, and discharge into the surface of the back-road.

Floors.

The floors of both schools are constructed of tongued and grooved boards, with a ventilated cavity underneath.

They are swept every night, and cleansed three times a year: Christmas, Easter, and August.

Walls.

The walls in the Boys' and Infants' Schools are plastered, and boarded to a height of 5ft.; above this height they are painted bluish-green colour. The walls in the girls' schools are boarded up to 5ft. with boards grained and varnished, and above this height they are plastered and painted slate-green colour.

Heating.

The warming of the rooms is by means of hot water pipes placed round the rooms, and radiators in Infants' Rooms.

INFANTS' SCHOOLROOMS.

These schoolrooms are situated on the ground floor, and may be entered from Altom Street. The large room is divided into three classrooms.

Room No. 4.

This room is at the east end of the School, measures 43ft. 9in. x 35ft. 0in., or 1,531 sq. ft. The average number of infants present during June was 85, thus allowing 18.0 sq. ft. of floor space per head. The total cubic capacity is 22,720 cubic feet, or 267.3 cubic feet per head.

Ventilation. The ventilation consists of six Sherringham window openings, 2ft. 2in. x 1ft. 10in., at the upper parts; five window openings on hinges, 2ft. 2in. x 1ft. 10in. at the top; three casement windows, 2ft. 11in. x 1ft. 11in.; one grating in air shaft, 1ft. 4in. x 9in., leading to revolving ventilator on roof; two gratings in ceiling, 3ft. 4in. x 1ft. 0in.; one circular outlet in ceiling, 9in. in diameter; three small gratings in outer wall, 6in. x 6in., close to ceiling.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one grating in air shaft, leading to revolving ventilator on roof; two gratings in ceiling; one circular outlet in ceiling, and three small inlet gratings in the outer wall.

The total area of permanent outlet ventilation is 1,275 sq. in., thus allowing 15.0 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 244.6 sq. ft., which is equal to one-sixth of the floor space. Of the 244.6 sq. ft. of glass, 35 sq. ft. are semi-transparent.

The light is received from the left, front, and behind.

There are 24 gas jets.

Room No. 3.

This is an infants' class-room, and measures 35ft. \times 32ft. 6in., or 1,137 sq. ft. The average number of infants present during June, 1903, was 100, thus allowing 11.3 sq. ft. of floor space per head. The total cubic capacity is 16,880 cubic feet, or 168.8 cubic feet per head.

Ventilation. The ventilation consists of six hopper windows, 2ft. 2in. \times 1ft. 10in., and two hinged windows, 2ft. 2in. \times 1ft. 10in., opening at the top; three casement windows, 2ft. 11in. \times 1ft. 11in.; one grating, 1ft. 4in. \times 9in., in air shaft, leading to revolving ventilators on roof, and one circular opening in ceiling, 9in. in diameter. There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one grating close to ceiling, in air shaft leading to revolving ventilator on roof, and one circular opening in ceiling, or 207 sq. in., thus allowing 2.0 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 150 sq. ft., which is equal to one-seventh of the floor space.

The light is from left and right.

There are 24 naked gas jets.

Of the 150 sq. ft. of glass, almost 18 sq. ft. are semi-transparent.

Room No. 2.

This is the babies' room, and it measures 23ft. 10in. \times 21ft. 6in., or 512 sq. ft. The average number of scholars present during June, 1903, was 90, thus allowing 5.7 sq. ft. of floor space per head. The total cubic capacity is 7,602 cubic feet, or 83.3 cubic feet per head. If allowance be made for the whole width of the room the total cubic capacity would be 10,974 cubic feet, or 121.9 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, 2ft. 2in. \times 1ft. 10in., and three opening on hinges, opening at the upper parts; two casement windows, 2ft. 11in. \times 1ft. 11in., and three gratings in outer walls, 6in. \times 6in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of three gratings in the outer wall close to ceiling, or 108 sq. in., thus allowing 1.2 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area of this room is 120 sq. ft., which is equal to one-fourth of the floor space. There is another window not calculated in the above, as it lights a passage leading from this room into the yard.

The lighting is from behind and right.

There is a gallery for the babies.

Of the 120 sq. ft. of lighting 17 sq. ft. are of semi-transparent glass.

FIRST FLOOR.

There is one large room which can be divided into three, but this is seldom done. There is also one class-room on the first floor.

Large Room.

This large room measures 3,101 sq. ft., and the average number of boys present during September, 1903, was 232, thus allowing 13.3 sq. ft. of floor space per head. The total cubic capacity is 47,020 cubic feet, or 202.6 cubic feet per head.

Ventilation. The ventilation consists of 14 Sherringham windows, and 10 opening on hinges, 2ft. 2in. \times 1ft. 10in., at the top; 14 gratings in ceiling, 2ft. \times 2ft., leading to revolving ventilators in roof; seven casement windows, 2ft. 11in. \times 1ft. 11in.; one grating in wall, 1ft. 4in. \times 9in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of 14 gratings in ceiling, and one grating in wall. The total area of permanent outlet ventilation is 8,208 sq. in., thus allowing 35.3 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area of this room is 480 sq. ft., which is equal to one-sixth of the floor space. Of the 480 sq. ft. of glass in this room 155.5 sq. ft. are semi-transparent.

One class receives the light from the back, right and left; one from the back and front, and the other from the back and left.

There are 38 gas jets.

Room No. 5.

This is a boys' class-room, and measures 18ft. 6in. \times 15ft. 0in., or 277 sq. ft. The average number present during September, 1903, was 35 thus allowing almost 7.9 sq. ft. of floor space per head. The total cubic capacity is 2,775, or 79.2 cubic feet per head.

Ventilation. The ventilation consists of two window openings on hinges, 2ft. 2in. \times 1ft. 10in., two casements, 1ft. 5in. \times 1ft. 10in., and an open fire-grate.

There is no permanent or cross ventilation.

Lighting. The lighting consists of two windows, having an area of 40 sq. ft., which is equal to one-sixth of the floor space.

The light is received from behind.

There is a cooking-stove, and also a slopstone in this class-room.

GIRLS' DEPARTMENT.

This school is separate from the boys' and infants', and is entered from Bicknell Street. It contains six class-rooms.

Room No. 7.

This room measures 22ft. 3in. \times 15ft. 9in., or 350 sq. ft., and the average number present during September, 1903, was 37, thus allowing 9.4 sq. ft. of floor space per head. The total cubic capacity is 4,973 cubic feet, or 134.4 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, 1ft. 11in. \times 2ft. 4in.; two hopper window openings, 2ft. 8in. \times 1ft. 10in.; and three casements, 1ft. 7in. \times 11in., at 5ft. from floor; two Tobin's tubes, 5in. \times 4in., at 8ft. from floor; one grating in ceiling, 1ft. 6in. \times 1ft. 6in.; one outlet in air-shaft, 8in. \times 8in., and one, 9in. \times 6in., leading to "Cooper's" ventilator on roof.

The permanent inlet ventilation consists of two Tobin's tubes, at a height of 8ft. from floor, 5in. \times in., or 40 sq. in., thus allowing almost 1.1 sq. in. per head.

The permanent outlet ventilation consists of one outlet in air-shaft, 8in. \times 8in., and one 9in. \times 6in., leading to "Cooper's" ventilator on

roof, and one grating in ceiling leading to ventilator, 1ft. 6in. \times 1ft. 6in. The total area of permanent outlet ventilation is 442 sq. in., thus allowing 11.9 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area of this room is 82 sq. ft., which is equal to one-fourth of the floor space. Of the 82 sq. ft. of glass, about 21 sq. ft. are semi-transparent.

The light is from the left and right.

There are eight gas jets.

Room No. 6.

This room measures 18ft. 9in. \times 16ft. 0in., or 300 sq. ft., and the average number of girls present during September, 1903, was 38, thus allowing 7.9 sq. ft. of floor space per head. The total cubic capacity is 4,250 cubic feet, or 111.8 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 2ft. 10in. \times 1ft. 10in., and two, 1ft. 7in. \times 11in., at top of windows; one casement window, 1ft. 10in. \times 1ft. 4in.; two gratings in air-shaft, one in ceiling; two Tobin's tubes, 5in. \times 4in.

The permanent inlet ventilation consists of two Tobin's tubes, or 40 sq. in., thus allowing 1.0 sq. in. per head.

The permanent outlet ventilation consists of one grating in air-shaft, 8in. \times 8in., one 9in. \times 6in., and one grating in ceiling 1ft. 6in. \times 1ft. 6in., leading to Cooper's ventilator on roof.

The total area of permanent outlet ventilation is 442 sq. in., thus allowing 11.6 sq. in. per head.

There is slight cross ventilation.

Lighting. The total lighting area is 57 sq. ft., which is equal to one-fifth of the floor space.

The light is from left and behind.

There are six naked lights for artificial lighting.

Of the 57 sq. ft. of glass (the lower panes) 10 sq. ft. are semi-transparent.

Room No. 9.

This room measures 36ft. 2in. \times 16ft. 3in., or 587 sq. ft., and the average number of girls present during September, 1903, was 40, thus allowing 14.6 sq. ft. of floor space per head. The total cubic capacity is 10,778 cubic feet, or 269.4 cubic feet per head.

The room is carried up to the apex.

Ventilation. The ventilation consists of two windows on hinges, 2ft. \times 2ft.; three, 1ft. 8in. \times 9in., and two over doors, 3ft. 9in. \times 1ft. 9in.; two gratings in end wall, 12in. \times 6in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings in the end wall, or 144 sq. in., thus allowing 3.6 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 109 sq. ft., and 27 sq. ft. from skylight = 136 sq. ft. This is equal to one-fourth of the floor space. Of the 136 sq. ft. of glass 14.9 sq. ft. are semi-transparent, and in addition to this two windows up to 7ft. 0in., are covered over by the cloak-room. The roof of the cloak-room is also constructed of semi-transparent glass.

The light is from the back, left and front.

Room No. 10.

This room measures 32ft. \times 18ft., or 576 sq. ft., and the average number of girls present during September, 1903, was 41, thus allowing 14.0 sq. ft. of floor space per head. The total cubic capacity is 9,936 cubic feet, or 242.3 cubic feet per head.

Ventilation. The ventilation consists of 10 Sherringham windows, 2ft. 4in. \times 1ft. 10in., at the top of windows; two casement windows, 1ft. 7in. \times 11in., and one opening on hinges, 2ft. \times 2ft.; three Tobin's tubes, 5in. \times 4in.; an open fire-grate, two gratings in chimney-breast, one 9in. \times 6in., and one 8in. \times 8in.

The permanent inlet ventilation consists of three Tobin's tubes, or 60 sq. in., thus allowing 1.4 sq. in. per head.

The permanent outlet ventilation: two gratings in chimney-breast. The total area of permanent outlet ventilation is 118 sq. in., thus allowing 2.8 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 152 sq. ft., which is equal to one-third of the floor space. Of the 152 sq. ft. of glass 52 sq. ft. are semi-transparent, and 13 sq. ft. are yellow glass.

The lighting is from left, right, and behind.

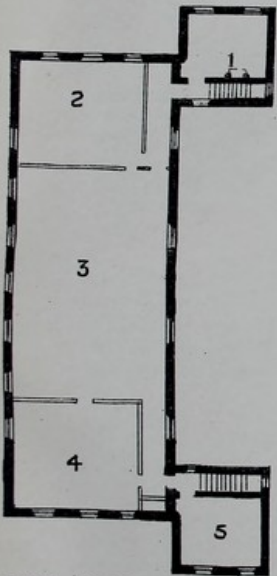
There are 15 naked gas jets.

Room No. 11.

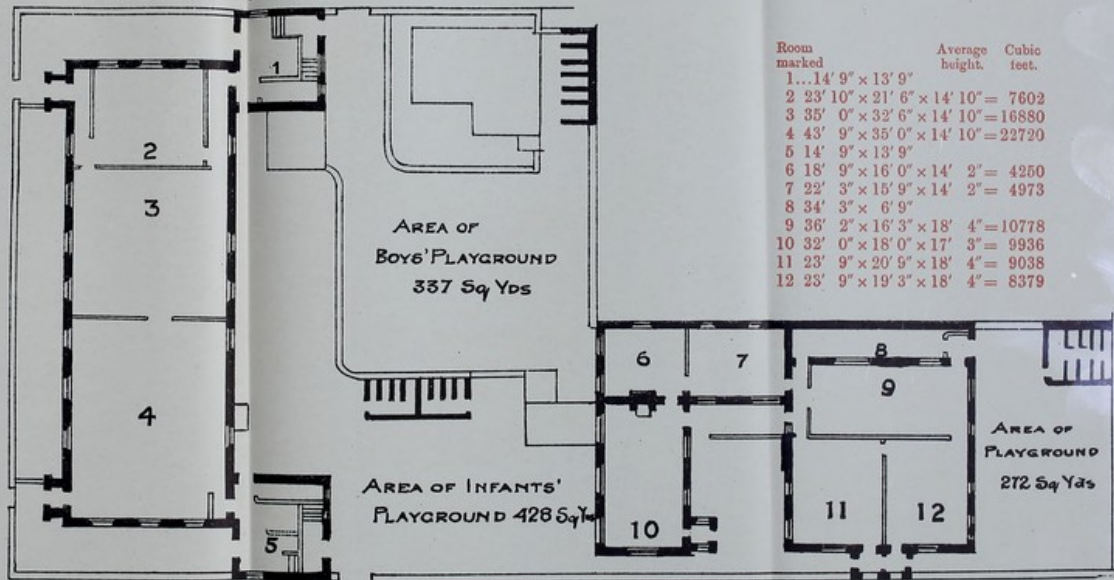
This room measures 23ft. 9in. \times 20ft. 9in., or 493 sq. ft., and the average number of girls present during September, 1903, was 35,

ST JOHN'S SCHOOLS

Scale 30 FT to 1 inch.



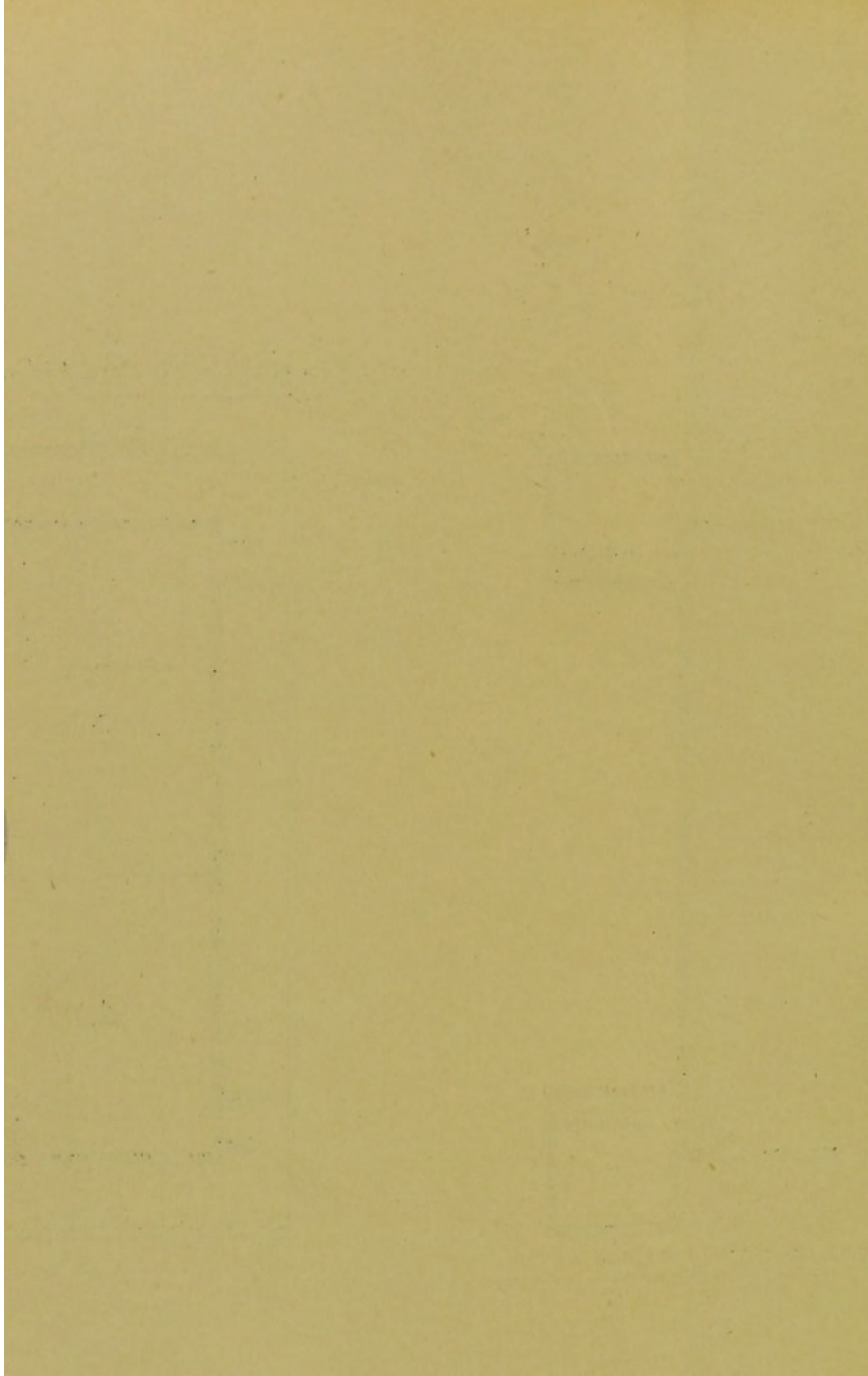
FIRST FLOOR PLAN



GROUND PLAN

Room marked	Average height.	Cubic feet.
1... 14' 9" x 13' 9"		
2 23' 10" x 21' 6" x 14' 10"		= 7602
3 35' 0" x 32' 6" x 14' 10"		= 16880
4 43' 9" x 35' 0" x 14' 10"		= 22720
5 14' 9" x 13' 9"		
6 18' 9" x 16' 0" x 14' 2"		= 4250
7 22' 3" x 15' 9" x 14' 2"		= 4973
8 34' 3" x 6' 9"		
9 36' 2" x 16' 3" x 18' 4"		= 10778
10 32' 0" x 18' 0" x 17' 3"		= 9936
11 23' 9" x 20' 9" x 18' 4"		= 9038
12 23' 9" x 19' 3" x 18' 4"		= 8379

Room marked	Average height.	Cubic feet.
1... 18' 2" x 15' 0"		
2... 28' 4" x 23' 6" x 15' 2"		= 10092
3... 49' 9" x 35' 0" x 15' 2"		= 26397
4... 28' 9" x 24' 2" x 15' 2"		= 10530
5... 18' 6" x 15' 0" x 10' 0"		= 2775



thus allowing 14.1 sq. ft. of floor space per head. This room is carried up to an apex.

The total cubic capacity is 9,038 cubic ft., or 258.2 cubic feet per head.

Ventilation. The ventilation consists of one casement window opening, 2ft. 8in. \times 1ft. 6in.; one hopper, 2ft. \times 2ft.; three hinge windows, 1ft. 8in. \times 9in., at top; and one casement window, 2ft. \times 9in., and louvred opening in wall, close to roof, 12in. \times 6in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one louvred outlet in wall, close to roof, or 72 sq. in., thus allowing 2 sq. in. per head.

Lighting. The total lighting area is 67 sq. ft. side light, 25 sq. ft. from roof = 92 sq. ft., or one-fifth of the floor space.

The light is from left, behind, and indirectly from front and right.

There are eight gas jets for artificial lighting.

Of the 92 sq. ft. of glass, 12 sq. ft. are semi-transparent.

There is slight cross ventilation through the glazed slides.

Room No. 12.

This room measures 23ft. 9in. \times 19ft. 3in., or 457 sq. ft., and the average number of girls present during September, 1903, was 50, thus allowing 9.1 sq. ft. of floor space per head.

This room is carried up to an apex.

The total cubic capacity is 8,379 cubic feet, or 167.6 cubic feet per head.

Ventilation. The ventilation consists of one casement window opening 2ft. 8in. \times 1ft. 6in.; one hopper, 2ft. \times 2ft.; three hinge windows, 1ft. 8in. \times 9in. at top; and one casement window, 2ft. \times 9in.; one louvred outlet in wall close to roof, 12in. \times 6in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one louvred opening in wall, close to roof, or 72 sq. in., thus allowing 1.4 sq. in. per head.

Cross ventilation slightly.

Lighting. The total lighting area is 67 sq. ft. side light, 25 sq. ft. from roof = 92 sq. ft., or one-fifth of the floor space.

The light is from left and front, and indirectly from right and behind.

This room has glazed sides on right and at back.

There are eight gas jets.

Of the 92 sq. ft. of glass 12 sq. ft. are semi-transparent.

Recommendations.

- I. To provide ventilation openings where they are necessary.
- II. To fix handrails to staircases.
- III. To arrange that rooms 5, 6, 7 and 12 shall not contain more than 27, 30, 35, and 45 scholars respectively.

ST. MICHAEL'S INFANT SCHOOL,

UNION BUILDINGS.

There is no record when this School was erected.

The School is a brick building of one storey. The external walls require pointing. The downspouts are of iron and wood. The roof gutters are of stone.

Playground.

The playground measures 160 sq. yds., and is flagged.

Sanitary Conveniences.

The sanitary conveniences are of the earthenware trough type, having a shaft from seat-board to the trough about 12in. in length.

There are six compartments, one of which is used by the teachers, and 8 linear feet urinal, without flushing apparatus. They are situated about six yards from the school.

The conveniences are flushed once a week by means of a 30-gallon cistern.

Refuse.

The dry refuse is stored in an ash-tub, in a brick building adjoining the conveniences.

Walls.

The internal surfaces of the walls are plastered, and coloured brown and green.

Heating.

The heating is by means of stoves and a fire-place.

Lighting.

The artificial lighting is by gas.

The window-panes are of plain glass.

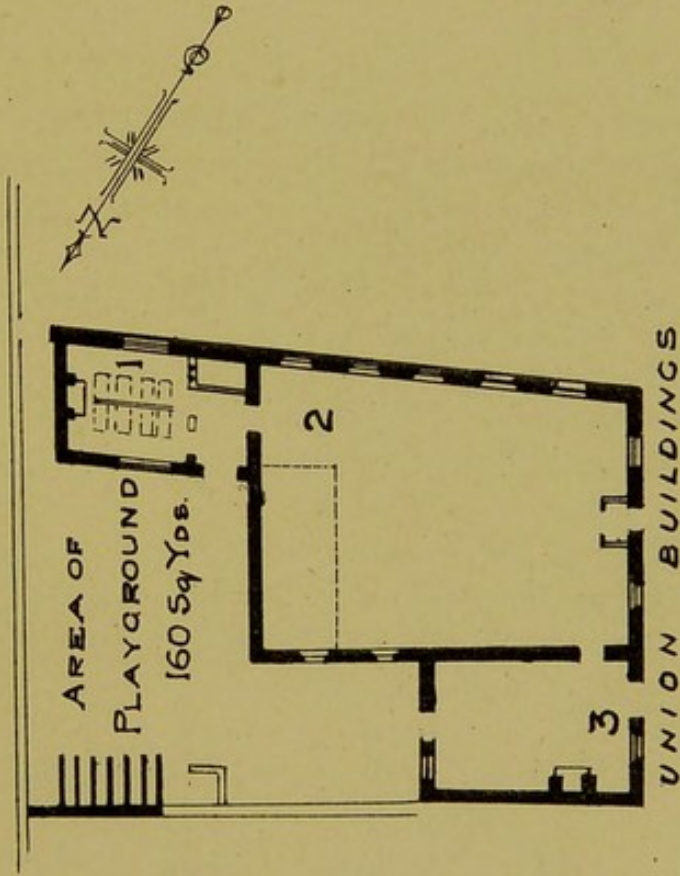
Floors.

The floors are swept daily and washed once a year.

This school consists of one large schoolroom and a class-room.

ST MICHAEL'S SCHOOL. UNION BUILDINGS

Scale 30 feet to 1 inch



Room marked	Average height.	Cubic feet.
1...	15' 6" x 15' 0"	
2...	46' 0" x 34' 0" x 22' 3"	= 34799
3...	25' 0" x 17' 0" x 16' 2"	= 7073



Cloak-Rooms.

The cloak-room is at the north end of the school, and is 15ft. 6in. \times 15ft. The floor is boarded, and is uneven. The walls are plastered and coloured green.

The walls, to a height of 5ft. from the floor, are boarded, and are of a chocolate colour.

This room is heated by means of a fire-place, which has a guard attached to it.

Lighting. This room is lighted by windows and skylight, giving a lighting area of about 40 sq. ft.

Ventilation. One window has been made to open 5ft. 6in. \times 1ft., and one window hopper, 2ft. 2in. \times 6in. There are two ventilators in the wall, 9in. \times 6in., which were blocked with pieces of cloth at time of visit. There is an outlet ventilator in the roof measuring 20 sq. in.

There are 76 pegs for the clothes.

Large Schoolroom.

This room is heated by means of two stoves, which are supplied with guards. The flue from the stove fixed in the middle of the room passes under the floor and then to the chimney. The second stove is fixed close to a fire-place.

The average number present in this room during June, 1903, was 88.

The total floor area measures 1,564 sq. ft., or an average of 17.7 sq. ft. per scholar. The total cubic capacity is 34,799 cubic feet, or 395.4 cubic feet per head.

Lighting. The total lighting area measures 244 sq. ft., or about one-sixth of the floor space. The light is received from the left and behind for one class, and for two right and behind.

Ventilation. This room is ventilated by means of two hopper windows, 1ft. 2in. \times 1ft. 10in., and two 3ft. 8in. \times 3ft. 6in., on swivels at about 16ft. from floor, and four outlet ventilators in the roof.

There is no permanent inlet ventilation, and the area of the permanent outlet ventilation, in the ceiling, two openings, 3ft. \times 1ft., or 432 sq. in., giving an average of 4.9 sq. in. per scholar, and probably two openings in ceiling where the gas pendants used to be fixed act as ventilators.

Three classes meet regularly in this school, and are separated by curtains fixed to rings on iron rods.

Classroom.

The average number present in this class-room during June, 1903, was 40.

The total floor area measures 437.6 sq. ft., allowing 10.9 sq. ft. per scholar. The total cubic capacity is 7,073 cubic feet, or 176.8 cubic feet per head.

Lighting. The total lighting area measures 51 sq. ft., or about one-eighth of the floor space. The light is received from the front and from behind.

Ventilation. This room is ventilated by means of two permanent inlet ventilators of the Tobin's tube variety, 20in. x 4in., 6ft. from the floor, which have an area of 160 sq. in., allowing each scholar 4 sq. in.

There is no permanent outlet ventilation.

Two windows are made to open like Sherringham hoppers, 2ft. 6in. x 2ft., two 2ft. 6in. x 1ft. 8in. on swivels, at 12ft. from floor, and one sash window, 4ft. 4in. x 2ft. 9in.

This room is heated by means of a stove, to which a guard is attached. The stove is fixed near the fire-place, into which the flue is carried.

There is a lavatory basin in this room; the waste pipe is not trapped and discharges over a gully outside.

Recommendations.

- I. To provide iron downspouts.
- II. To repair gutters, walls, floors, and roof.
- III. To improve the ventilation openings where deficient.
- IV. To abolish the curtains.

ST. SILAS' SCHOOL,

CLEMATIS STREET.

This school was originally built in 1884, but the greater part has now been pulled down, and a two-storey building erected. One wing, erected in 1896, has not been pulled down. The school is built of brick, and is situated in Clematis Street.

Playgrounds.

There are two playgrounds, one for boys, and one for girls; completely separated from each other. The surface slopes towards the school, and is unflagged. There is no covered playground. The boys' playground measures 632 sq. yds., and the girls', 1,275 sq. yds.

Sanitary Conveniences.

There are four sanitary conveniences for the boys. They are a form of pedestal discharging into one common pipe. Each basin is separately flushed; a 30-gallon automatic cistern flushes the four.

The girls have eight sanitary conveniences, of the same type as the boys', and a 30-gallon automatic flushing cistern to this series.

Each compartment measures 2ft. to seatboard, and 2ft. wide, is well lighted, and ventilated by louvred openings in roof.

There is a passage in front of the compartments not open to the external air.

The infants have four sanitary conveniences of the same type as boys' and girls'. The compartments measure 3ft. to seatboard, and 2ft. 5in. wide. They are ventilated by the doors being left short at the top, and openings behind, 6in. \times 2in.. There is a passage in front of the compartment 3ft. wide, open to external air.

Urinals.

There are 12 linear feet of urinals for the infant boys, and 11 linear feet for the larger boys. The backs are constructed of slate, and a flush pipe placed round for flushing.

The floors of the sanitary conveniences are concreted, and slope towards the gully and channel of the urinals.

These sanitary conveniences adjoin the boys' cloak-room.

Drainage.

The drainage appears to be satisfactory, and the downspouts discharge over gullies.

Refuse.

There is an ash-tub in the yard, without any cover, and there is an open brick receptacle for the clinkers from the boiler. This receptacle adjoins the infants' sanitary conveniences.

Girls' Cloakroom No. 17.

The girls' cloak-room is situated in a room opposite the first flight of steps at the east entrance, and it measures 21ft. 6in. \times 9ft. 6in., and is lighted by one window, 7ft. 0in. \times 2ft. 9in., of which 4ft. 0in. \times 2ft. 9in. open outwards, for ventilation. The walls are cemented, the

floor concreted. The room is warmed by hot water pipes. There are 158 hooks, placed on one rack and against the walls, and each peg is numbered.

Boys' Cloakroom No. 3.

This cloak-room is situated on the left of the entrance from the boys' playground. It measures 15ft. 9in. \times 14ft. 6in., and is lighted by four sash windows, 2ft. 5in. \times 1ft. 5in. One outlet ventilator in ceiling, 2ft. \times 2ft. The floor is constructed of concrete. There are 141 hooks, placed on racks in the centre of the floor and numbered. This room is also used as a store place, and there is a copper boiler for boiling water for tea meetings.

Infants' Cloakroom No. 9.

This cloak-room is on the ground floor, and situated opposite the east entrance. It measures 24ft. 9in. \times 9ft. 6in., and is lighted by twelve sash windows, 2ft. 6in. \times 1ft. 6in. each. There are 146 hooks which are numbered, placed on racks. There are three Sherringham valves, 11in. \times 5in., close to the floor, and two outlet gratings, 10in. \times 8in., near the ceiling. The floor is constructed of concrete.

Juniors' Cloakroom No. 6.

This cloakroom is situated in the porch in Clematis Street, and measures 16ft. 8in. \times 12ft. 3in. It is lighted by eight sash windows. There are 146 hooks, placed on racks and against walls, the floor is boarded.

Lavatory Accommodation.

There are three white glazed lavatory basins in the girls' cloak-room; waste pipes are connected to one common pipe, discharge over downspout hopper head, and thence over a gully in the yard.

There are five white glazed lavatory basins in a porch adjoining the boys' cloak-room.

There are four white glazed lavatory basins in the infants' cloak-room, of the same construction as the girls'. There are also four in the passage near No. 7 room.

There is a brown and white glazed sink in a cupboard in the boys' cloak-room, but this is only used for tea-meetings; the waste pipe is not trapped, and discharges over a gully in the yard.

Staircases.

There are two staircases, one for boys and one for girls. Both staircases are constructed of stone steps, three flights, with hand-rail fixed against the walls. The staircases are well lighted.

Heating.

The heating is carried out by hot water pipes, and on the 1st floor warm air is discharged into the rooms.

Walls.

The walls in the Infants' Department, and on the 1st floor, are boarded up to 4ft. 6in. from floor; above this height plastered and painted pale green.

The walls in the main room of the Junior Department are boarded up to 4ft. 6in. from floor; above this height plastered and painted pale green.

Floors.

The floors are constructed of tongued and grooved boards, with cavity underneath ventilated, and are swept each night.

INFANTS' DEPARTMENT.

Consists of three rooms, Nos. 7, 8, and 11 on ground floor.

Room No. 7.

This room measures 22ft. \times 21ft., or 462 sq. ft., thus accommodating 51 persons. The cubic capacity is 6,545 cubic feet.

Ventilation. The ventilation consists of all the window space being made to open by means of sash windows; one Sherringham valve, 11in. \times 6in.; one box tube, 9in. \times 4in., 7ft from the floor; two gratings in ceiling, 12in. \times 12in.

The permanent inlet ventilation consists of one Sherringham valve, and one box tube. The total area of permanent inlet ventilation is 102 sq. in., thus allowing 2 sq. in. per head.

The permanent outlet ventilation consists of two gratings in ceiling, or 288 sq. in., thus allowing 5.6 sq. in. per head.

Lighting. The total lighting area is 63 sq. ft., which is equal to one-seventh of the floor space.

The light is from the right.

There is one incandescent light.

Room No. 8.

This room measures 49ft. 3in. \times 22ft. 0in., or 1,083 sq. ft., thus accommodating 120 scholars. The total cubic capacity is 15,343 cubic feet.

Ventilation. The ventilation consists of all the window space being made to open by means of sash windows, and two opening on hinges; four Sherringham valves, 11in. x 6in., at 5ft. from floor; one wooden tube, 9in. x 4in., at 7ft. 6in. from floor; three gratings in outside walls, 12in. x 12in., 6in. from ceiling.

The permanent inlet ventilation consists of four Sherringham valves, 11in. x 6in., and one wooden tube, 9in. x 4in. The total area of permanent inlet ventilation is 300 sq. in., thus allowing 2.5 sq. in. per head.

The permanent outlet ventilation consists of three gratings in walls, 12in. x 12in., or 432 sq. in., thus allowing 3.6 sq. in. per head.

Lighting. The total lighting area is 169 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left.

There are three incandescent lights.

Room No. 11.

This room measures 22ft. 6in. x 20ft. 0in., or 450 sq. ft., thus accommodating 50 scholars. The total cubic capacity is 6,375 cubic feet.

Ventilation The ventilation consists of all the window space being made to open by means of sash windows; one Sherringham valve, 11in. x 6in., at 5ft. 8in. from floor; one wooden tube, 9in. x 4in., at 6ft. 6in. from floor; one grating in outer wall, 12in. x 12in., at 6in. from ceiling, and an open fire-place with no guard.

The permanent inlet ventilation consists of one Sherringham valve, and one wooden tube. The total area of permanent inlet ventilation is 102 sq. in., thus allowing 2.0 sq. in. per head.

The permanent outlet ventilation consists of one grating in outer wall, 12in. x 12in., or 144 sq. in., thus allowing 2.8 sq. in. per head.

Lighting. The total lighting of this room is 65 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left.

There are two incandescent lights.

JUNIORS' ROOMS.

There are three rooms for the juniors on ground floor, and numbered 1, 2, and 4.

Room No. 1.

This room measures 26ft. 3in. \times 22ft. 0in., or 577 sq. ft., thus accommodating 57 scholars. The total cubic capacity is 9,528 cubic feet.

Ventilation. The ventilation consists of four hopper windows, 1ft. 9in. \times 1ft. 6in., at 6ft. from floor, and four opening inwards on hinges, at top of windows, three measuring 2ft. \times 1ft. 9in., and one 3ft. 6in. \times 2ft. (the portions which act as hoppers are also sash windows); one box tube, 9in. \times 4in., at 7ft. from floor; two outlets in chimney-breast, 6in. \times 6in.; one outlet in ceiling, 12in. \times 12in., and four 6in. \times 6in., and open fire-grate.

The permanent inlet ventilation consists of one box tube, or 36 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of two outlets in chimney-breast; five outlets in ceiling. The total area of permanent outlet ventilation is 360 sq. in., thus allowing 6.3 sq. in. per head.

Lighting. The total lighting area is 78 sq. ft., which is equal to one-seventh of the floor space.

The light is from the right and behind.

There are 12 gas jets, and one incandescent light.

Room No. 2.

This room measures 23ft. 4in. \times 22ft. 0in., or 513 sq. ft., thus accommodating 51 scholars. The total cubic capacity is 8,470 cubic feet.

Ventilation. The ventilation consists of four Sherringham windows, 1ft. 9in. \times 1ft. 6in. (these also act as sash windows), and four opening on hinges at top of windows, three measuring 2ft. \times 1ft. 9in., and one 3ft. 6in. \times 2ft.; one box tube, 9in. \times 4in., at 7ft. from floor; two outlets in chimney-breast, 6in. \times 6in.; one outlet in ceiling, 12in. \times 12in., and four 6in. \times 6in.

The permanent inlet ventilation consists of one box tube, or 36 sq. in., thus allowing .7 sq. in. per head.

The total area of permanent outlet ventilation is 360 sq. in., thus allowing 7 sq. in. per head.

Lighting. The total lighting area is 78 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left and behind.

There are 12 naked gas jets, and one incandescent light.

Room No. 4.

This is the large room, measures 54ft. 6in. \times 22ft. 3in., or 1,212 sq. ft., thus accommodating 122 scholars. The total cubic capacity is 16,976 cubic feet.

Ventilation. The ventilation consists of eight sash windows, six 5ft. 4in. \times 1ft. 6in., and two 3ft. \times 2ft.; three opening inwards on hinges, 4ft. 6in. \times 1ft. 6in.; four 2ft. 6in. \times 1ft. 6in.; two 3ft. 0in. \times 1ft. 6in.; and one 1ft. 6in. \times 1ft. 6in., all opening at the top; two box tubes, 9in. \times 4in., at 7ft. from floor; two outlets in ceiling, 12in. \times 12in.

The permanent inlet ventilation consists of two box tubes, or 72 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of two outlets in ceiling, leading to cowl in roof, or 288 sq. in., thus allowing 2.3 sq. in. per head.

Lighting. The total lighting area is 215 sq. ft., which is equal to almost one-sixth of the floor space.

The light is from behind and right.

There are 27 naked gas jets and three incandescent lights.

FIRST FLOOR.

This floor is divided into five class rooms, by glazed sliding doors. There is a passage the entire length of the rooms, and each class-room is entered by a door opening in this passage.

Room No. 12.

This room measures, 25ft. \times 20ft., or 500 sq. ft., thus accommodating 50 scholars. The total cubic capacity is 8,291 cubic feet.

Ventilation. The ventilation consists of almost all the window space being made to open; inlet grating in floor, 11in. \times 6in., discharging air through a radiator and warming the air; one Sherringham valve, 12in. \times 4in.; one outlet in ceiling, 2ft. 6in. \times 2ft. 6in., and an open fire-grate.

The permanent inlet ventilation consists of one grating in floor, and one Sherringham valve, 12in. \times 4in. The total area of permanent inlet ventilation is 114 sq. in., thus allowing 2.3 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, 2ft. 6in. \times 2ft. 6in., or 900 sq. in., which is equal to 18 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 55 sq. ft., which is equal to one-ninth of the floor space, but light is also received from the passage, and from one class-room to another.

The light is from right and left.

There is one incandescent light.

Room No. 13.

This room measures 25ft. \times 17ft. 8in., or 441 sq. ft., thus accommodating 44 scholars. The total cubic capacity is 7,324 cubic feet.

Ventilation. The ventilation consists of almost all the window space being made to open; inlet ventilator in floor, as in No. 12 Room, 11in. \times 6in.; one Sherringham valve, 12in. \times 4in., at 5ft. 10in. from floor; and one outlet in ceiling, 2ft. 6in. \times 2ft. 6in.

There is cross ventilation.

The permanent inlet ventilation consists of inlet ventilator on floor, and one Sherringham valve. The total area of permanent inlet ventilation is 114 sq. in., thus allowing 2.6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, or 900 sq. in., thus allowing 20.4 sq. in. per head.

Lighting. The total lighting area is 40 sq. ft., which is equal to one-eleventh of the floor space, but light is also received from the windows in the passage.

The light is from left and right.

There is one incandescent gas jet for artificial lighting.

Room No. 14.

This room measures 25ft. \times 17ft. 8in., or 441 sq. ft., thus accommodating 44 scholars. The total cubic capacity is 7,581 cubic feet.

Ventilation. The ventilation consists of almost all the window space, made to open; inlet ventilator on floor (discharging warm air into the room), 11in. \times 6in.; two Sherringham valves, 12in. \times 4in., at 5ft. 10in. from floor, and one outlet in ceiling, 2ft. 6in. \times 2ft. 6in.

There is cross ventilation.

The permanent inlet ventilation consists of inlet ventilator in floor, 11in. \times 6in., and two Sherringham valves. The total area of permanent inlet ventilation is 162 sq. in., thus allowing 3.6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, 2ft. 6in. \times 2ft. 6in., or 900 sq. in., thus allowing 20.4 sq. in. per head.

Lighting. The total lighting area is 38 sq. ft., which is equal to one-eleventh of the floor space, but light is also received through the glass slides in the passage.

The light is from left and right.

There is one incandescent light.

Room No. 15.

This room measures 25ft. \times 17ft. 8in., or 441 sq. ft., thus accommodating 44 scholars. The total cubic capacity is 7,324 cubic feet.

Ventilation. The ventilation consists of almost all the window space being made to open; inlet ventilator in floor discharging warm air into room, 11in. \times 6in.; one Sherringham valve, 12in. \times 4in., at 5ft. 10in. from floor; one outlet in ceiling, 2ft. 6in. \times 2ft. 6in.

There is cross ventilation.

The permanent inlet ventilation consists of inlet ventilator in floor, and one Sherringham valve. The permanent inlet ventilation area is 114 sq. in., thus allowing 2.6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, 2ft. 6in. \times 2ft. 6in., or 900 sq. ins., thus allowing 20.4 sq. in. per head.

Lighting. The total lighting area is 40 sq. ft., which is equal to one-eleventh of the floor space, but light is also received through the glass slides in passage.

The light is from left and right.

There is one incandescent light.

Room No. 16.

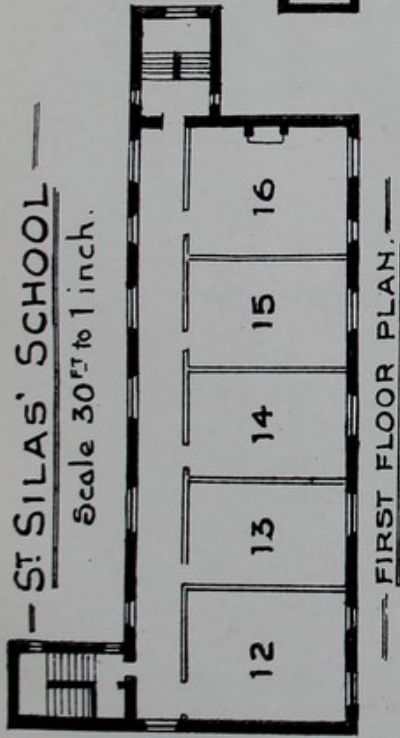
This room measures 25ft. 0in. \times 20ft. 0in., or 500 sq. ft., thus accommodating 50 scholars. The total cubic capacity is 8,291 cubic feet.

Ventilation. The ventilation consists of almost all the window space being made to open; one inlet ventilator in floor, discharging warm air into room, 11in. \times 6in.; one Sherringham valve, at 5ft. 10in. from floor, 12in. \times 4in.; one outlet in ceiling, 2ft. 6in. \times 2ft. 6in.; an open fire-grate.

There is cross ventilation.

— ST SILAS' SCHOOL —

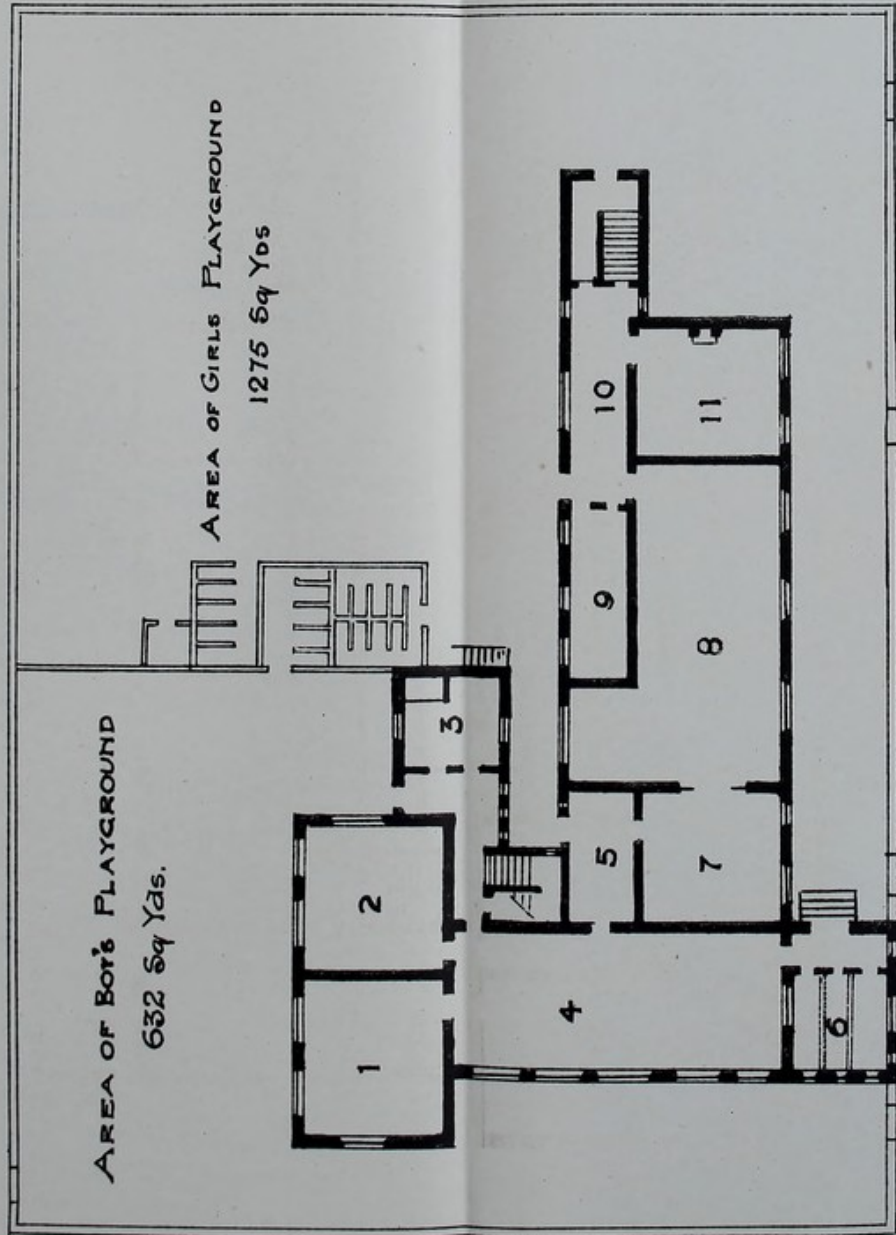
Scale 30" to 1 inch.



— FIRST FLOOR PLAN. —

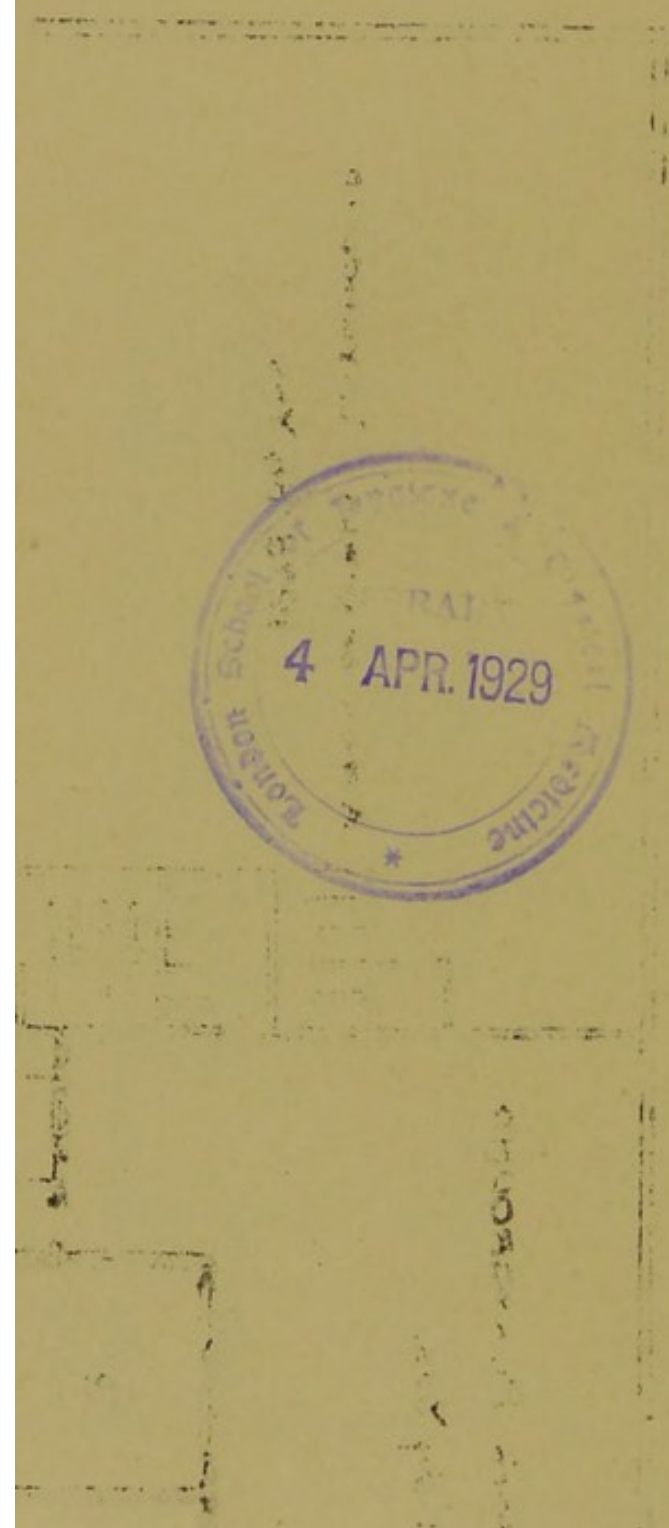
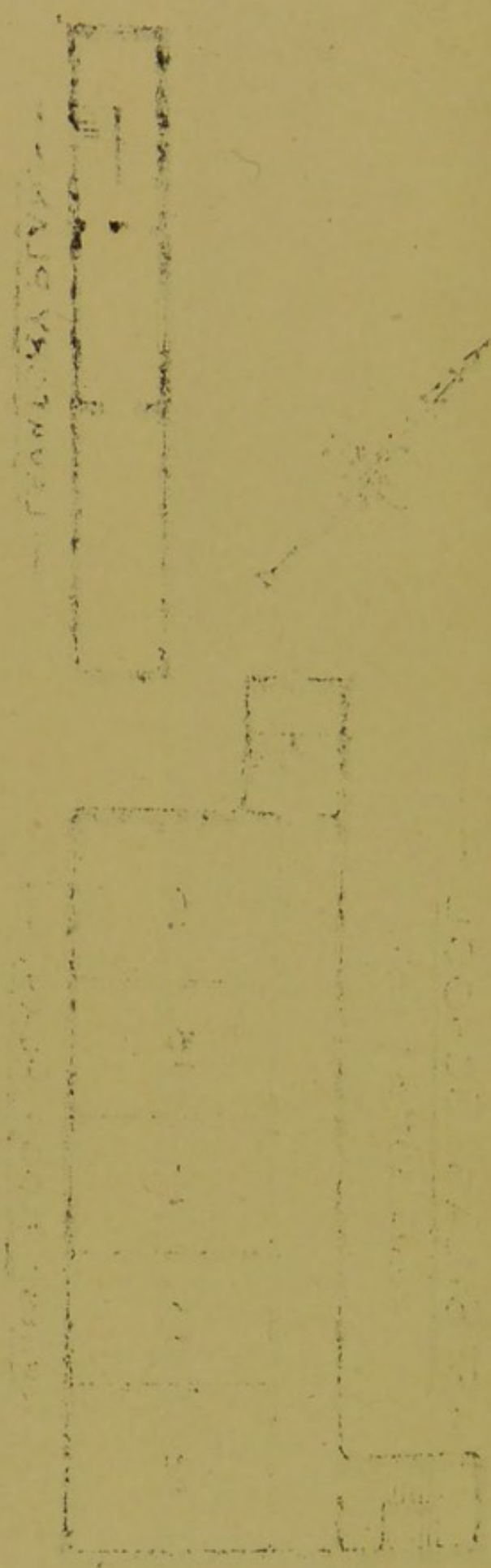
— LAVATORY PLAN. —

Room marked.	Average height.	Cubic feet.
1... 26' 3" x 22' 0" x 16' 6"	= 16' 6"	= 9528
2... 23' 4" x 22' 0" x 16' 6"	= 16' 6"	= 8470
3... 15' 9" x 14' 6"		
4... 54' 6" x 22' 3" x 14' 0"	= 14' 0"	= 16976
5... 20' 9" x 9' 6" x 14' 5"	= 14' 5"	= 2842
6... 16' 8" x 12' 3" x 10' 0"		
7... 22' 0" x 21' 0" x 14' 2"	= 14' 2"	= 6545
8 { 49' 3" x 22' 0" x 14' 2" = 15343		
8 { 15' 9" x 11' 0" x 14' 2" = 2455		
9.. 24' 9" x 9' 6" x 7' 0"	= 7' 0"	
10... 35' 3" x 9' 5" x 7' 0"	= 7' 0"	
11... 22' 6" x 20' 0" x 14' 2"	= 14' 2"	= 6375
12... 25' 0" x 20' 0" x 16' 7"	= 16' 7"	= 8291
13... 25' 0" x 17' 8" x 16' 7"	= 16' 7"	= 7324
14... 25' 0" x 17' 8" x 17' 8"	= 17' 8"	= 7581
15... 25' 0" x 17' 8" x 16' 7"	= 16' 7"	= 7324
16... 25' 0" x 20' 0" x 16' 7"	= 16' 7"	= 8291



— GROUND FLOOR PLAN. —

CLEMATIS STREET



The permanent inlet ventilation consists of inlet ventilator in floor, and one Sherringham valve. The total area of permanent inlet ventilation is 114 sq. in., thus allowing almost 2.3 sq. in. per head.

The permanent outlet ventilation consists of one opening in ceiling, or 900 sq. in., thus allowing 18 sq. in. per head.

Lighting. The total lighting area is 55 sq. ft., which is equal to one-ninth of the floor space; but light is also received through the glass slides in passage.

There is one incandescent light, and there are two naked lights.

Mechanical Ventilation. The ventilation in the infants' department, and 1st floor, is effected by four electric fans, extracting the air into the turret on roof.

Recommendations.

- I. To provide suitable dry refuse storage.
- II. To insert permanent inlet ventilation openings in Rooms 1, 2 and 4, on the ground floor.

HIGHER GRADE SCHOOL,

MONTAGUE STREET.

This was first used as a School in 1889. The main building is of stone, and is partly situated under the Wesleyan Chapel, in Preston New Road. The laboratory block is of brick, and of recent erection. The entrance to these Schools is from Montague Street. This is a boys' school.

Playgrounds.

There is one playground, which measures 1,160 sq. yds. It is partly flagged and partly paved; there is also a portion on the east and west side of the School which is unflagged. The paved portion is at the entrance to the yard from Montague Street, and across the yard from one series of sanitary conveniences to the other. The portion flagged is immediately in front of the entrance to the main building.

The ground falls towards the laboratory block.

Sanitary Conveniences.

There are two series of sanitary conveniences: one near one side of the entrance to the main school, and one near the other side. There are five compartments in each series, measuring 4ft. from door to pedestal, and 2ft. 6in. wide. There are 26 linear feet of urinal accommodation, 12 linear feet of urinals in front of the compartments on the east side of the school, which are divided into four, and the sides are constructed of stone and rendered with cement 5ft. 6in. from the floor. Fourteen linear feet of urinals are in front of the compartments on the west side of the School. The backs and sides of these urinals are of stone. The floors of the conveniences and urinals are flagged, and a channel has been formed, leading to a properly trapped gully outside. They are flushed by hand once a week, and the rain-water pipes from the closet roofs are directed into the channel. The sanitary conveniences are well-lighted and ventilated.

The type is a form of pedestal, connected to an elliptical pipe running along the floor of each compartment. A flush pipe is connected to each basin, and they are flushed about six times a day by a 20-gallon cistern for each of the two sets of conveniences. This cistern is placed about 6ft. above the conveniences in the centre.

Drainage.

The drainage appears to be in good order. There are four inspection chambers. Two chambers near the entrance receive the drainage of two conveniences in the church above, and are ventilated by two iron ventilating pipes carried up the side of the building, terminating about 1ft. above the window in the church. There is another chamber near the eastern conveniences, and there is also a chamber, with a disconnecting trap, in the minister's yard.

The downspouts are partly connected and partly disconnected.

Refuse.

There are three ash-tubs, not covered, and placed on the left of the entrance-gate in Montague Street.

Cloak-Rooms.

There are two cloak-rooms, one at each entrance of the main school. There are 74 hooks in one cloak-room and 112 in the other, placed against the walls. These cloak-rooms are lighted by a window, 5ft. 5in. x 2ft. 3in. each. They are separated from the schoolrooms by a passage, in which clothes are also hung. The floors are flagged, and the rooms heated by hot water pipes.

Lavatory Accommodation.

There are two white glazed lavatory basins in the cloak-room in the right entrance. The waste pipes discharge into one common pipe, and then over a gully outside. In the cloak-room in the left entrance there is a brown and white glazed sink, with drainer (hot and cold water), the waste pipe of which discharges over a gully in yard.

Heating.

The heating of the School is carried out by means of pipes placed round the schoolrooms.

Although the joiner's shop is warmed by hot water pipes, it is very cold in winter.

Floors.

The floors of the School are constructed of tongued and grooved boards. The floor of the practical chemistry room is concreted. The floors are swept every night and washed twice a year.

Walls.

The walls are boarded to a height of 4ft. from the floor with pitchpine boards, varnished, and above this height they are rendered with plaster, and painted a pale green colour. The walls were painted five years ago.

There is evidence of much dampness in the chemical rooms, owing to the land behind being about 4ft. higher, although the wall is cemented. A dry area should be formed behind, to remedy this dampness.

There are five rooms in the main school and two teachers' rooms, Nos. 1, 2, 3 are used for the adult boys, Nos. 4 and 5 for the infants, and Nos. 7 and 8 are teachers' rooms.

Room No. 1 (Large).

This room measures 3,196 sq. ft., and the average number of children present during September, 1903, was 87, thus allowing 36.7 sq. ft. of floor space per head. The total cubic capacity is 50,388 cubic feet, or 579.1 cubic feet per head.

Ventilation. The ventilation of this room consists of four upper window openings on hinges, 2ft. x 3ft. 6in., without side shields; five gratings in window-sills, 8½in. x 6in., and three gratings in the outer walls, 7in. x 5in.

The permanent inlet ventilation consists of five gratings in window-sills, or 255 sq. in., thus allowing 2.9 sq. in. per head.

The permanent outlet ventilation consists of three gratings in the wall 7in. \times 5in., or 105 sq. in. thus allowing 1.2 sq. in. per head.

There is not cross ventilation when the class-room slides are closed.

Lighting. The back and one side of this room, near the partition are dark, but these portions are not occupied by boys. The total lighting area is 254 sq. ft., or one-twelfth of the floor space. There is indirect light through the glass slides which separate class-rooms (2 and 3) from the large room (1).

The direction of the light is from the left.

The lower panes of glass are semi-transparent, the remainder are clear glass.

Room No. 2.

This is a class-room partitioned from the large room by glass slides. It measures 21ft. 10in. \times 14ft. 10in., or 323 sq. ft., and the average number of children present during September, 1903, was 46, thus allowing 7.0 sq. ft. of floor space per head. The total cubic capacity is 5,179 cubic feet, or 112.6 cubic feet per head.

Ventilation. Ventilation consists of three hopper windows, 2ft. \times 3ft. 6in., and two gratings in window-sills, 8½in. \times 6in.

The permanent inlet ventilation consists of two gratings in window-sills, or 102 sq. in., thus allowing 2.2 sq. in. per head.

The permanent outlet ventilation consists of one opening, 7in. \times 5in., allowing .7 sq. in. per head.

There is not cross ventilation, except when the glazed slides are opened.

Lighting. The total lighting area is 56 sq. ft., or one-sixth of the floor space.

The light is from the left, and the glass is yellow in colour.

There are 12 gas jets.

Room No. 3

Is a class-room, also partitioned from the large room (1), and measuring 25ft. \times 14ft. 10in., or 370 sq. ft. The average number of boys present during September, 1903, was 38, thus allowing 9.7 sq. ft. of floor space per head. The total cubic capacity is 5,932 cubic feet, or 156.1 cubic feet per head.

Ventilation. The ventilation consists of two upper windows opening on hinges; two upper hopper windows, each measuring 2ft. \times 3ft. 6in.; and two gratings in window-sills (8½in. \times 6in.).

The permanent inlet ventilation consists of two gratings in window-sills, or 102 sq. in., thus allowing 2.6 sq. in. per head.

The permanent outlet ventilation consists of one opening, 7in. \times 5in., or 35 sq. in., thus allowing .9 sq. in. per head.

There is no cross ventilation, except when the glazed slides are opened.

Lighting. The total lighting area is 56 sq. ft., which is equal to one-sixth of the floor space.

The light is from the right.

There are 12 gas jets.

Room No. 4

Is a class-room, measuring 35ft. \times 20ft. 4in., or 711 sq. ft. The average number of boys present during September, 1903, was 67, thus allowing 10.6 sq. ft. of floor space per head. The total cubic capacity is 10,319 cubic feet, or 154.0 cubic feet per head.

Ventilation. There are four windows opening on hinges, 1ft. 2in. \times 1ft. 6in., 7ft. from the floor; six inlet gratings in window-sills, 7½in. \times 6in.; one circular opening in the ceiling, 1ft. 6in. in diameter, and an open firegrate.

The permanent inlet ventilation consists of six inlets in window-sills, or 270 sq. in., thus allowing 4 sq. in. per head.

The permanent outlet ventilation consists of one circular opening in the ceiling, or 254 sq. in., thus allowing 3.7 sq. in. per head.

There is slight cross ventilation.

Lighting. The windows are glazed with coloured glass. The total lighting area is 95 sq. ft., or one-seventh of the floor space.

The light is from the back, left, and slightly from the front.

There are 18 gas jets.

Room No. 5

Is a class-room for the infants, measuring 21ft. \times 16ft., or 336 sq. ft., and the average number of infants in this room during June, 1903, was 38, thus allowing 8.8 sq. ft. of floor space per head. The total cubic capacity is 5,376 cubic feet, or 141.2 cubic feet per head.

Ventilation. The ventilation consists of two windows opening 1ft. 6in. \times 1ft. 6in., one of which is a hopper, and one opening on hinges at the top; six gratings in window sills, 3½in. \times 6in., and one circular opening in the ceiling, 1ft. 6in. in diameter.

The permanent inlet ventilation consists of six gratings in window-sills, or 126 sq. in., thus allowing 3.3 sq. in. per head.

The permanent outlet ventilation consists of one circular opening in the ceiling, or 254 sq. in., which is equal to 6.6 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area of this room is 65 sq. ft., or one-fifth of the floor space.

The light is from the back, right, and left. Five of the six windows have yellow-coloured glass.

There are 13 gas jets.

Room No. 6

Is a class-room which is not often used, but at time of visit there were 18 infants present. The room measures 13ft. 6in. \times 15ft. 5in. or 208 sq. ft., and calculating on the number present at time of visit there are 11.5 sq. ft. of floor space per head. The total cubic capacity is 2,913 cubic feet, or 161.8 cubic feet per head.

Ventilation. The ventilation consists of one upper window opening on hinges, 2ft. \times 2ft.; two gratings in the window-sill, 3½in. \times 6in., and one open fire-place.

The permanent inlet ventilation consists of two openings in window-sills or 42 sq. in., thus allowing 2.3 sq. in. per head.

The permanent outlet ventilation consists of an open fire-grate only.

There is no cross ventilation.

Lighting. The total lighting area is 56 sq. ft., or one-fourth of the floor space.

The windows are glazed with yellow-coloured glass.

The light is from the left.

There are four gas jets.

This room might be fitted up as a dining room for those boys who come from a distance.

JOINERS' SHOP (1)

Measures 21ft. 8in. \times 25ft. 6in., or 552 sq. ft., and the average number of boys employed is 16, thus allowing 34.5 sq. ft. of floor space per head.

The cubic capacity is 7,456 cubic feet, or 466 cubic feet per head.

Ventilation. The ventilation consists of four windows opening on hinges, 2ft. \times 2ft.; two openings in roof, 1ft. 6in. \times 1ft. 0in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two openings in the roof, or 432 sq. in., which is equal to 27 sq. in. per head.

Lighting. The total lighting area consists of 57 sq. ft. of side light, and 60 sq. ft. of light from roof, or a total of 117 sq. ft., or one-fourth of the floor space.

The light is from the left, right and above.

There are 13 gas jets.

LABORATORY BLOCK.

There are four rooms in this block. No. 2 is the lecture room, No. 3 is the chemical laboratory, and Nos. 4 and 5 are class-rooms. The numbers in these rooms are changing so often that it is not possible to state the average number present.

The passage is used as a cloak-room.

No. 2 Lecture Room

Measures 21ft. 10in. \times 15ft. 5in., or 336 sq. ft., thus allowing 33 scholars. The total cubic capacity is 4,880 cubic feet.

Ventilation. The ventilation consists of two upper windows opening on hinges, 2ft. 6in. \times 2ft. 6in.

Lighting. The total lighting area is 79 sq. ft., or one-fourth of the floor space.

The light is from the left.

There are eight gas jets.

This room communicates with the chemical laboratory, which is ventilated by three outlets in ceiling, 2ft. \times 2ft. each.

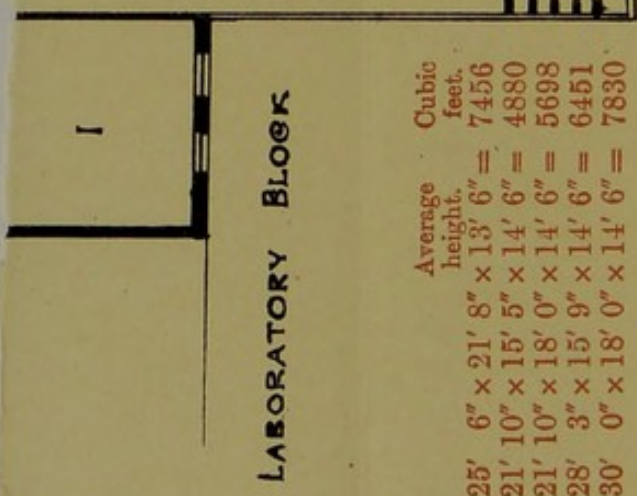
Room No. 4

Is a class-room, measuring 28ft. 3in. \times 15ft. 9in., or 444 sq. ft., and thus allowing accommodation for 44 scholars. The total cubic capacity is 6,451 cubic feet.

Ventilation. The ventilation consists of four gratings in the floor, 7½in. \times 6in. There are no window openings, but the slides which divide this room from No. 5 room, are generally kept open to some extent. There are also two openings in the roof (2ft. \times 2ft.).

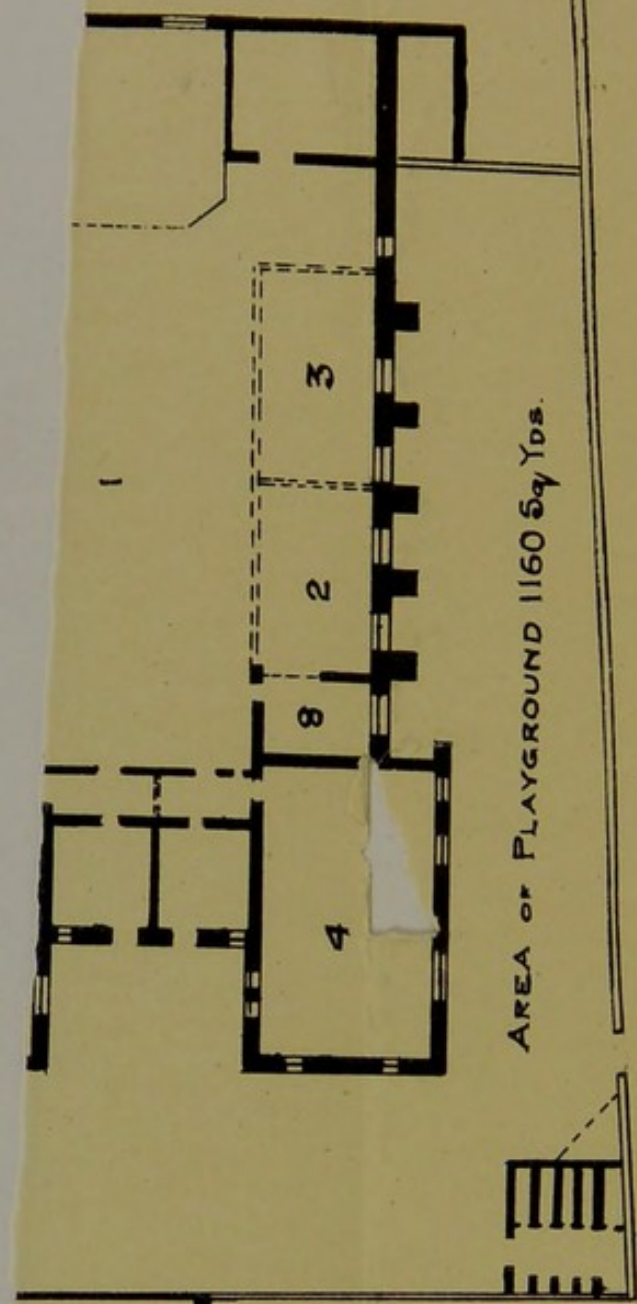
The permanent inlet ventilation consists of four gratings in the floor, or 180 sq. in., thus allowing nearly 4.1 sq. in. per head.

The permanent outlet ventilation consists of two openings in the roof, or 1,152 sq. in., thus allowing almost 26.1 sq. in. per head.



LABORATORY BLOCK

Room marked	Average height.	Cubic feet.
1.....	25' 6" x 21' 8" x 13' 6" =	7456
2.....	21' 10" x 15' 5" x 14' 6" =	4880
3.....	21' 10" x 18' 0" x 14' 6" =	5698
4.....	28' 3" x 15' 9" x 14' 6" =	6451
5.....	30' 0" x 18' 0" x 14' 6" =	7830

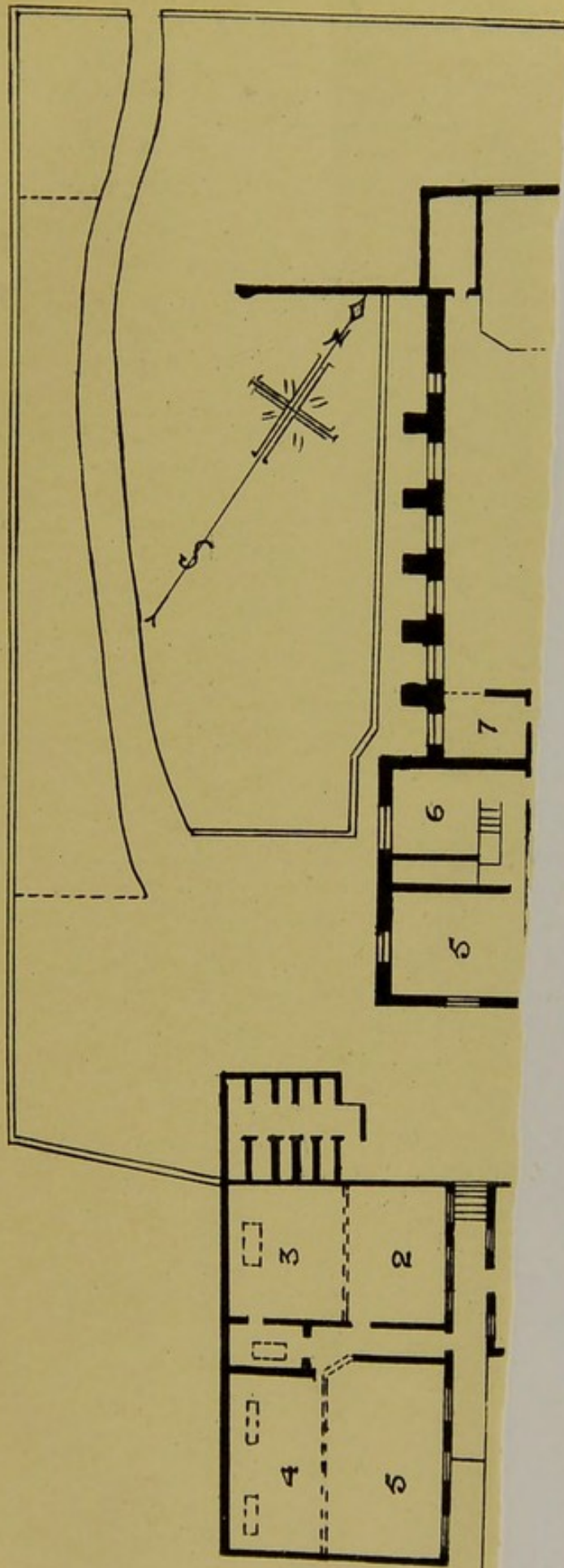


AREA OF PLAYGROUND 1160 Sq Yds.

Room marked	Average height.	Cubic feet.
1.....	23' 6" x 13' 10" x 16' 0" }	= 50388 from cubic space.
2.....	59' 5" x 38' 0" x 16' 0" }	
3.....	15' 4" x 13' 3" x 16' 0" }	
4.....	14' 0" x 29' 4" x 16' 0" }	
5.....	29' 4" x 10' 0" x 2' 7" }	
6.....	21' 10" x 14' 10" x 16' 0" =	517
7.....	25' 0" x 14' 10" x 16' 0" =	593
8.....	35' 0" x 20' 4" x 14' 6" =	1031
	21' 0" x 16' 0" x 16' 0" =	537
	13' 6" x 15' 5" x 14' 0" =	291
	13' 6" x 10' 10" x 14' 0" =	204
	14' 2" x 11' 1" x 14' 0" =	219

— PUBLIC HIGHER GRADE SCHOOL —

Scale 30 feet to 1 inch



RAJ
PR. 1929

IN THE OFFICE

ST. GEORGE'S HIGHER PRIMARY SCHOOL.

This school was erected in 1868, and is a stone building of three storeys. There are two entrances.

The external walls are in good repair.

There are two louvred ventilators on the roof.

There is one flagged playground, measuring 250.8 sq. yds. No portion is covered. There is a water tap in the playground.

Sanitary Conveniences.

The sanitary conveniences are of the iron trough type, and are situated at a distance of 46ft. from the school. There are seven compartments, three on one side and four on the other side, separated by a flagged passage, the surface of which is uneven. There are also 10 linear feet of covered urinal without flushing pipe. The conveniences are flushed once a day by means of a tippler. The iron trough does not reach as high as the seat-boards so that part of the wall is exposed below the seat-board and forms a side to the trough. The passage in front is 3ft. broad, and is covered.

Refuse.

The dry refuse is stored in covered ash-tubs.

Walls.

The internal surfaces of the walls of the School are plastered, and coloured chocolate and green. In some of the rooms the walls are boarded to a height of 4ft. from the floor.

Staircase.

There is a stone staircase, three flights and 31 steps, hand-rail, well lighted from Alma Street entrance. Ten steps lead down to ground floor.

Floors.

The floors are boarded, and the glass in the windows is partly ribbed and partly plain. The floors are swept daily and washed twice a year.

The window lighting the passage leading to the class-rooms on the second storey is of plain glass in small diamond-shaped panes.

The rooms are heated by hot water pipes.

The artificial light is electric light.

Cloak-Rooms.

There is a special cloak-room for the teachers, and adjoining this room there is a lavatory and pedestal wash-out w.c., the soil pipe of which is not ventilated. This room is situated near the top of the stairs on the first floor at the New Park Street end of the building.

The cloak-room for the scholars is situated on the ground floor at the New Park Street end of the school. This room is 24ft. x 12ft., and is lighted by a window 5ft. 6in. x 3ft. 6in. There is also a hopper window. It is heated by hot water pipes. There are 172 pegs on the walls and on four racks. There are three white enamelled lavatory basins in this room, encased by wood. The waste pipe discharges over a gully outside. There is one open fire-place and one opening near ceiling, 9in. x 9in. The yard adjoining is above the level of the floor of this room. The passage between the rooms Nos. 1, 2 and 3 is used as a cloak-room, in which there are 98 pegs. The light in this passage is deficient and the ventilation consists of one opening, fixed near the ceiling on the side adjoining the church.

GROUND FLOOR.—Room No. 1.

The average number present during September, 1903, was 35.5.

The total floor space measures 456 sq. ft., or an average of 12.8 sq. ft. per scholar. Part of the floor is in the form of a gallery. The total cubic capacity is 5,168 cubic feet, or 147.6 cubic feet per head.

Lighting.

The total lighting area measures 53.5 sq. ft., or about one-eighth of the floor space. The light is from the right.

Ventilation. There are two window hoppers, 2ft. 6in. x 9in. and 8ft. high; two openings near the ceiling, one 9in. x 9in., and one 9in. x 3in., and one open fire-place, which is not used for heating purposes.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings near the ceiling, or 108 sq. in., thus allowing 3.0 sq. in. per head.

There is no cross ventilation.

This room indirectly lights the passage used as a cloak-room, and two of these windows open on swivels into the passage.

Room No. 2.

The average number present during September, 1903, was 51.7.

The total floor space measures 540 sq. ft., or an average of 10.4 sq. ft. per scholar. The total cubic capacity is 6,129 cubic feet, or 118.5 cubic feet per head.

Lighting. The total lighting area measures 42 sq. ft., or about one-twelfth of the floor space. The light is received from the left.

Ventilation. There are two window hoppers, 2ft. 6in. \times 9in. and 8ft. high; two openings near the ceiling, one 9in. \times 9in., and one 9in. \times 3in., and one open fire-place, with a cooking-stove in front of it.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings near the ceiling, or 108 sq. in., thus allowing 2.0 sq. in. per head.

There is no cross ventilation.

Room No. 3.

The average number present during September, 1903, was 37.9.

The total floor space measures 270 sq. ft., or an average of 7.1 sq. ft. per scholar. The total cubic capacity is 3,825 cubic feet, or 100.9 cubic feet per head.

The floor is below the level of the surrounding ground on one side and the wall at this part is damp.

Lighting. The total lighting area measures 68.25 sq. ft., or about one-fourth of the floor space and the light is received from the right and behind.

Ventilation There are two window hoppers, 2ft. 6in. \times 9in. and 8ft. high; two Sherringham valves, 9in. \times 6in., 6ft. 4in. high, and an outlet in the ceiling, 18in. \times 18in., having an area of 324 sq. in.

The total permanent area of the inlet ventilation by the two Sherringham valves measures 108 sq. in., or an average of 2.8 sq. in. per scholar.

The total permanent outlet ventilation measures 324 sq. in., or an average of 8.5 sq. in. per scholar.

There is no cross ventilation.

FIRST FLOOR.—Room No. 4.

The average number present during September, 1903, was 49.1.

The total floor space measures 576 sq. ft., or an average of 11.7 sq. ft. per scholar. The total cubic capacity is 6,960 cubic feet, or 142.0 cubic feet per head.

Lighting. The total lighting area measures 71 sq. ft., or about one-eighth of the floor space. The light is received from the left, and this room indirectly lights the passage on the first floor.

There are three window hoppers, opening 2ft. 6in. \times 9in. and 9ft. high, and two openings near the ceiling, one 9in. \times 9in., and one 9in. \times 3in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings near the ceiling, or 108 sq. in., thus allowing 2.2 sq. in. per head.

Room No. 5.

The average number present during September, 1903, was 20.

The total floor space measures 385.0 sq. ft., or an average of 19.2 sq. ft. per scholar. The total cubic capacity is 4,660 cubic feet, or 233.0 cubic feet per head.

Lighting. The total lighting area measures 47 sq. ft., or about one-eighth of the floor space. The light is received from the left. There is also a window between this room and room No. 4.

Ventilation. There are two window hoppers, opening 2ft. 6in. \times 9in., and 9ft. high; two openings near the ceiling, one 9in. \times 9in., and one 9in. \times 3in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings near the ceiling, or 108 sq. in., thus allowing 5.4 sq. in. per head.

This room is used periodically by the members of the church.

SECOND FLOOR.—Room No. 6.

The average number present during September, 1903, was 96.5.

The total floor space measures 1,800 sq. ft., or an average of 18.6 sq. ft. per scholar. The total cubic contents is 32,400 cubic feet, or 335.8 cubic feet per head.

Lighting. The total lighting area measures 205 sq. ft., or about one-eighth of the floor space.

The light is received chiefly from the left, and partly from behind.

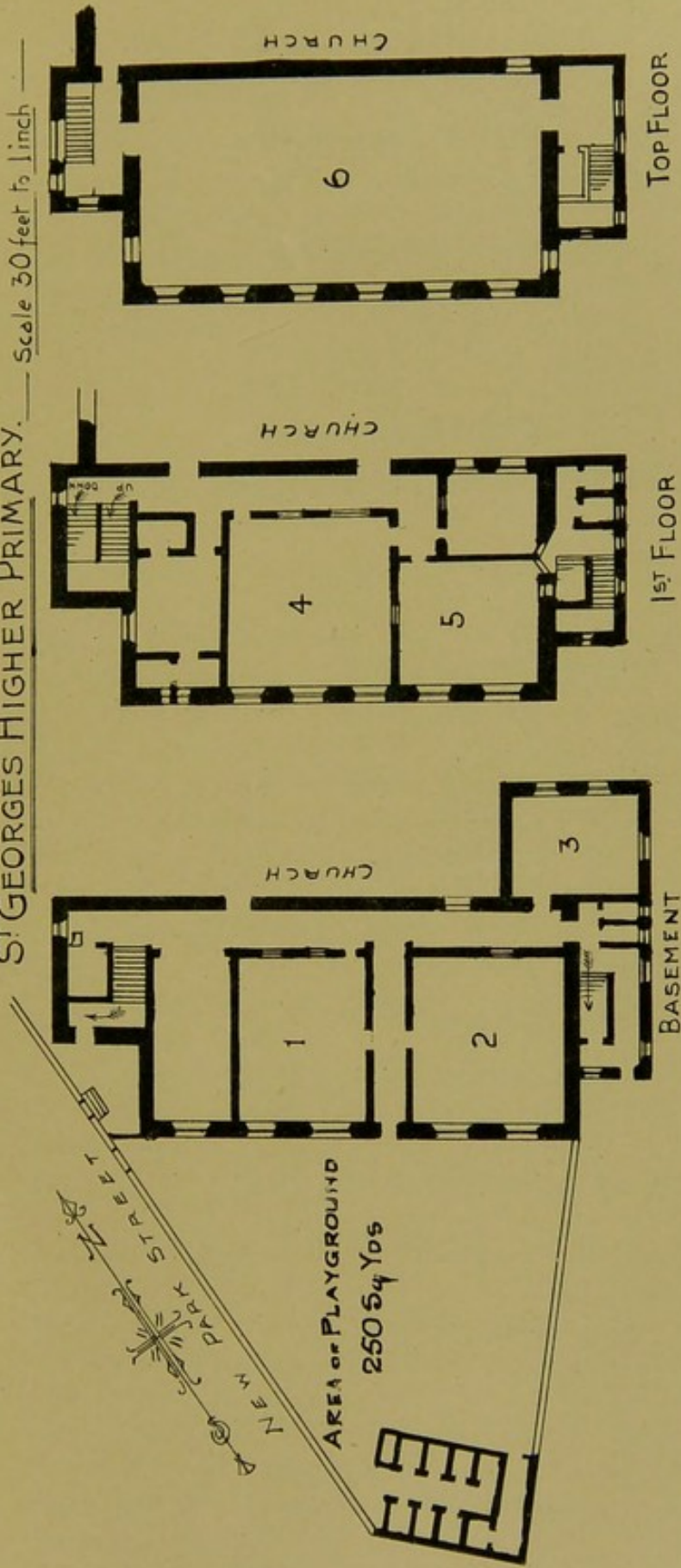
Ventilation. There are seven window hoppers, 2ft. 6in. \times 9in. at a height of 7ft. from the floor.

The outlet ventilation consists of 54 openings in the ceiling, 6in. \times 6in., giving an area of 1,944 sq. in., or an average of 20.2 sq. in. per scholar, and connected to Boyle's ventilators on the roof, there are also one casement, and one circular swivel window.

There are no inlet ventilators.

The walls of this room are boarded to a height of 4ft. from the floor.

ST GEORGE'S HIGHER PRIMARY. — Scale 30 feet to 1 inch —



Room marked.	24' 0"	24' 7"	18' 0"	24' 6"	21' 10"	60' 0"	Average height.	Cubic feet.
1	11' 4"	5168
2	11' 4"	6129
3	14' 2"	3825
4	12' 1"	6960
5	12' 1"	4660
6	18' 0"	32400



Recommendations.

- I. To form an area so that the soil is not in contact with the school wall.
- II. To improve the cloak-room accommodation.
- III. To improve the lighting and ventilation of class-rooms where necessary.

ST. ALBAN'S BOYS' ELEMENTARY SCHOOL,

OFF LARKHILL.

This School was erected in 1865, and is a one-storey building of brick.

There are louvres and Boyle's ventilators fixed in the roof.

There is one playground which is flagged and paved, and has an area of 365 sq. yds.

There is no covered playground.

The sanitary conveniences are of the earthenware trough type. There are five compartments, one of which is used by the teachers.

The dry refuse is stored in an uncovered ash-tub.

There is also a urinal without flushing fittings, which is fixed near the school wall and adjoining the conveniences.

There is one lavatory basin in No. 4 room, and the waste pipe is not trapped, and is directly connected to the drain, which passes underneath Room No. 2.

The internal surfaces of the school walls are plastered and coloured dark brown, to a height of 5ft. from the floor, and the remainder coloured green.

The floors are boarded, and is swept daily and washed once a month.

The heating of the rooms is by means of hot water pipes and radiators.

The glass in the windows is semi-transparent, except the window hoppers, which are plain. The windows are mullioned.

The artificial lighting is by gas.

This school consists of one main room and two class-rooms.

The cloak-room is situated near the entrance to the main room and class-room No. 2, and is 9ft. x 9ft. It is lighted by two small windows.

This room ventilates into the large school-room, as part of the wall near the roof is out of repair.

There are 160 pegs on the walls and racks.

The partition between the class-rooms is of wood and glass.

The ventilation consists of Tobin's tubes, window hoppers, and Boyle's outlet ventilators in the roof.

Schoolroom No. 1.

The average number present during September, 1903, was 211.

The total floor space measures 2,406 sq. ft., or an average of 11.4 sq. ft. per scholar. The total cubic capacity is 57,746, or 273.6 cubic feet per head.

Lighting. The total lighting area measures 329 sq. ft., or one-seventh of the floor space.

The light is received from behind and the left.

Ventilation. The total permanent inlet ventilation area measures 135 sq. in., or an average of .6 sq. in. per scholar, and consists of five Tobin's tubes, 7ft. from the floor, external area 12in. \times 9in., internal area 9in. \times 3in.

The total permanent outlet ventilation area measures 2,304 sq. in., or an average of 10.9 sq. in. per scholar, and consists of four outlets in the roof, each 2ft. square.

There are six window hoppers, also there are two swivel windows and one casement window. The opening area is 14in. \times 9in.

Classroom No. 2.

The average number present during September, 1903, was 87.

The total floor space measures 870 sq. ft., or 10.0 sq. ft. per scholar. The total cubic capacity is 13,278 cubic feet, or 152.6 cubic feet per head.

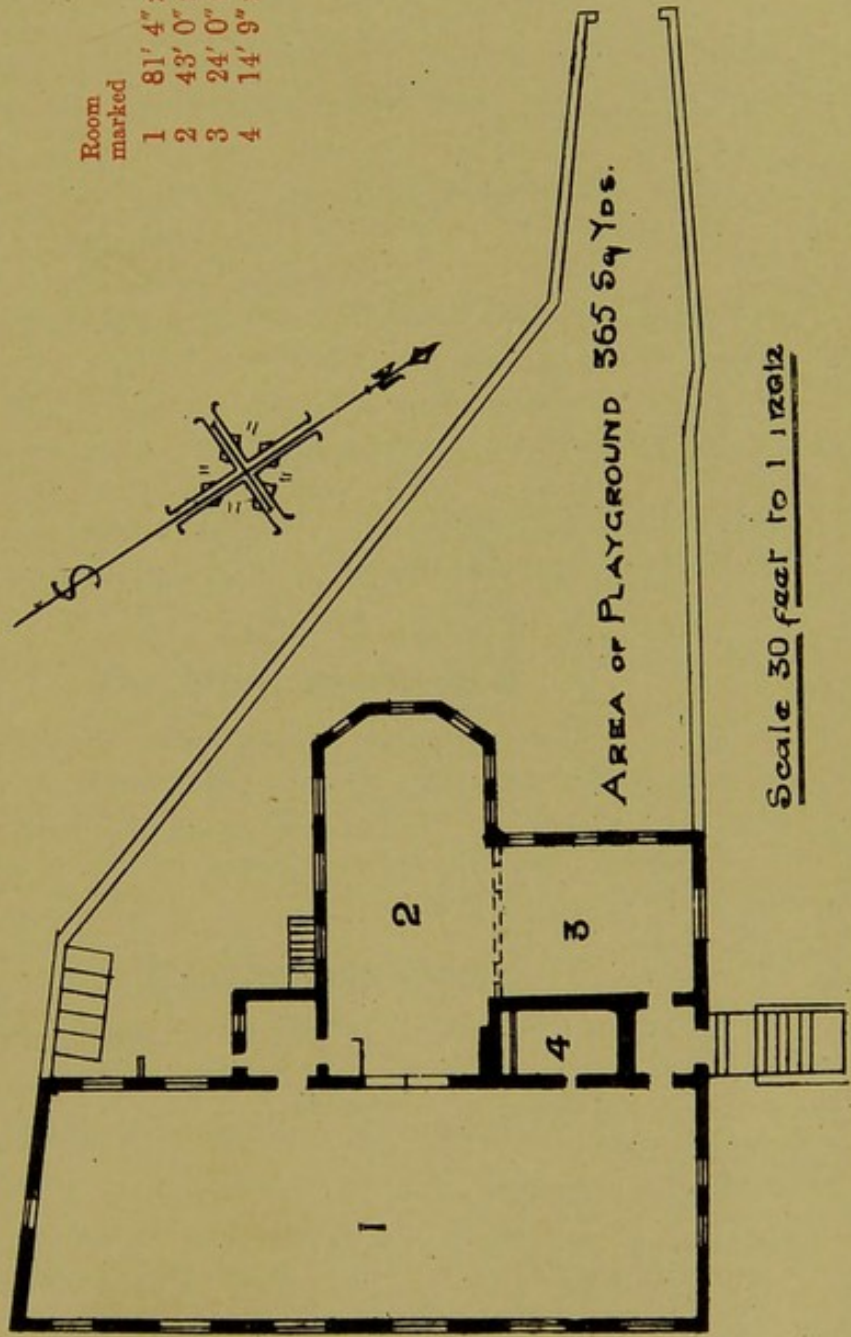
Lighting. The total lighting area measures 134 sq. ft., or one-sixth of the floor space.

The light is received from behind and the left.

The total permanent inlet ventilation area measures 108 sq. in., or an average of 1.2 sq. in. per scholar, and consists of two Tobin's tubes 9in. \times 6in., at a height of 5ft. 6in. from the floor.

The total permanent outlet ventilation area measures 576 sq. in., or an average of 6.6 sq. in. per scholar, and consists of four outlets in the roof (apex), each 12in. \times 12in.

— ST. ALBAN'S R. C. BOYS SCHOOL —



Room marked	Average height.	Cubic feet
1	81' 4" x 29' 7" x 24' 0"	= 57746
2	43' 0" x 20' 3" x 15' 3"	= 13278
3	24' 0" x 18' 0" x 15' 3"	= 6588
4	14' 9" x 8' 2" x 10' 4"	= 1243

Scale 30 feet to 1 inch



There are three window hoppers, three circular ones on swivels, and two casement windows.

Classroom No. 3.

The average number present in this room during September, 1903, was 54.

The total floor space measures 432 sq. ft., or an average of 8 sq. ft. per head. The total cubic capacity is 6,588 cubic feet, or 122.0 cubic feet per head.

Lighting. The total lighting area measures 110.5 sq. ft., or one-fourth of the floor space.

The light is from behind and the left.

The total permanent inlet ventilation area measures 162 sq. in., or an average of 3 sq. in. per scholar, and consists of two Tobin's tubes, 9in. x 9in., at a height of 5ft. 6in. from the floor.

The total permanent outlet ventilation area measures 432 sq. in., or an average of 8 sq. in. per scholar.

There are four window hoppers, and the ventilation is cross. Also one circular window opens on a swivel, and there are two casement windows.

The Store Room, No 4

This room was used as a class-room during one visit.

This room measures 12ft. 9in. x 8ft. 2in., and there were 37 scholars present, allowing less than 3 sq. ft. per scholar. The total cubic capacity is 1,075 cubic feet, or 29.0 cubic feet per head.

Recommendations.

- I. To provide a cover for the dry refuse.
- II To cease to use the store-room as a class-room.
- III. To provide plain glass in the windows.
- IV. To repair the wall between the main room and cloak-room.
- V. To provide more permanent inlet ventilation in the main schoolroom.
- VI. To arrange that class-room No. 3 shall not contain more than 43 scholars.
- VII. To improve the lavatory accommodation.

St. Alban's Girls' & Infants' Elementary Schools.

These Schools are situated on a plot of land between St. Alban's Place, Primrose Bank, and Trinity Street.

They were erected in 1888, and the building is stone, and two storeys; the ground floor only being used for school purposes.

There are Boyle's ventilators in the roof, but these are in connection with the first floor.

GIRLS AND INFANTS.

The playground measures 1,008 sq. yds., and is paved. There is no covered playground.

The sanitary conveniences are of the earthenware trough type, and there are ten compartments. There is one pedestal w.c. in yard for the use of the teachers, and one on first floor for the Sisters.

These conveniences are situated 4ft. from the infants' cloak-room, and there is a wooden partition about 3ft. 6in. high in front.

The dry refuse is stored in the boiler-house adjoining the cookery-room in the cellar.

The internal surfaces of the school walls are glazed brick to a height of 4ft. 6in. from the floor. The remainder are coloured green.

The floors are composed of wooden blocks, swept daily and washed four or five times a year.

The glass in the windows is plain, and the side walls near the window-frames are of white enamelled bricks.

The artificial lighting is by gas, and the partitions between the class-rooms are of wood and glass.

The rooms are heated by means of hot water pipes and radiators.

There are three cloak-rooms: one for the infants, one for the girls, and one for the teachers.

The girls' cloak-room, No. 5, is situated near the entrance of the playground, and is lighted by one window, 3ft. x 5ft. 4in.

It measures 20ft. x 15ft. 10in.

There are about 500 pegs, on racks, in the whole of the three cloak-rooms.

The scholars pass through this room to the cookery-room, which is below the level of the surrounding ground, and is used occasionally for a lesson in collective reading.

The cloak-room for the teachers adjoins room No. 6. It is lighted by two windows.

There are two lavatory basins in this room, the waste pipes of which are not trapped but discharge over a gully outside.

The cloak-room for infants, No. 4, adjoins class-room No. 3, and measures 14ft. x 10ft. 4in. This room is lighted by four small windows. The pegs are arranged on the walls, and on racks, and the floor is tiled.

GIRLS' DEPARTMENT.

This Department consists of one large schoolroom and four classrooms.

The number of scholars in each room is given approximately, as the classes change from one room to another frequently.

Classroom No. 6.

The average number present during September, 1903, was 140.

The total floor space measures 2,664 sq. ft., or an average of 19 sq. ft. per scholar. The total cubic capacity is 41,292, or 294.9 cubic feet per head.

Lighting. The total lighting area measures 493 sq. ft., or about one-fifth of the floor space, and the light is received from behind and the front.

Ventilation. The total permanent inlet ventilation area measures 243 sq. in., or an average of 1.7 sq. in. per scholar, and consists of six Tobin's tubes, 9in. x 4½in., opening at 7ft. from the floor.

The total permanent outlet ventilation area measures 126 sq. in., or .9 sq. in. per scholar, and consists of six gratings, 7in. x 3in., fixed near the ceiling.

There is good cross ventilation. There are 21 swivel windows opening at the top.

Classroom No. 7.

The average number present in September, 1903, was 38.

The total floor space measures 435.5 sq. ft., or an average of 11.4 sq. ft. per scholar. The total cubic capacity is 6,754 cubic feet, or 177.7 cubic feet per head.

Lighting. The total lighting area measures 85 sq. ft., or about one-fifth of the floor space.

The light is from behind.

Ventilation. The total permanent inlet ventilation area measures 81 sq. in., or an average of 2.1 sq. in. per scholar, and consists of two Tobin's tubes, 9in. \times 4 $\frac{1}{2}$ in.

The total permanent outlet ventilation area measures 27 sq. in., or .7 sq. in. per scholar, and consists of one grating in wall near the ceiling, 9in. \times 3in. There is also a grating in the division wall between this class-room and class-room No. 8.

Room No. 14

This is the cookery-room and is situated in the cellar. It measures 38ft. 8in. \times 20ft. 7in., or 795 sq. ft., and the maximum number of scholars present in this room is 54 thus allowing 14.7 sq. ft. of floor space per head. The total cubic capacity is 7,287 cubic feet, or 134.9 cubic feet per head.

Ventilation. There is one window square, 1ft. 10in. \times 1ft. 1in., which acts as a ventilator, and if this is calculated as a permanent ventilator it will equal 5.3 sq. in. per head. All the window space will open by means of sash windows.

Lighting. The total lighting area is 63 sq. ft., which is equal to one-twelfth of the floor space.

The light is from the right and behind.

The floor is tiled, and the internal walls are brick.

There is an open fire-grate, and a cooking stove; also a slop-sink, and the waste pipe is not trapped.

Access is gained to this room through the girls' cloak-room, and there are 14 steps to descend.

This room is sometimes used for collective reading by different classes, so that the number present varies.

Room No. 8.

The average number present during September, 1903, was 38.

The total floor space measures 435.5 sq. ft., or an average of 11.4 sq. ft. per scholar.

The total cubic capacity is 6,754 cubic feet, or an average of 177.7 cubic feet per head.

Ventilation. The total permanent ventilation consists of one Tobin's tube, 9in. \times 4 $\frac{1}{2}$ in., or 40.5 sq. in., thus allowing 1.0 sq. in. per head, and the permanent outlet ventilation consists of one grating in the wall near the ceiling, 9in. \times 3in., or 27 sq. in., thus allowing .7 sq. in. per head.

Lighting. The total lighting area is 85 sq. ft., or one-fifth of the floor space, and the light is from behind.

Classroom No. 9.

The average number present during September, 1903, was 35.

The total floor space measures 420 sq. ft., or an average of 12 sq. ft. per scholar. The total cubic capacity is 6,055 cubic feet, or 173 cubic feet per head.

Lighting. The total lighting area measures 83 sq. ft., or about one-fifth the floor space.

The light is received from behind and the left.

Ventilation. The total permanent inlet ventilation area measures 81 sq. in., or an average of 2.3 sq. in. per scholar, and consists of two Tobin's tubes, 9in. \times 4½in.

The total permanent outlet ventilation area measures 42 sq. in., or an average of 1.2 sq. in. per scholar, and consists of two gratings near the ceiling, 7in. \times 3in.

There is cross ventilation. There is an open fire-place.

Classroom No. 10.

The average number present during September, 1903, was 34.

The total floor space measures 390 sq. ft., or an average of 11.4 sq. ft. per scholar. The total cubic capacity is 5,622, or 165.3 cubic feet per head.

Lighting. The total lighting area measures 83 sq. ft., or about one-fourth of the floor space.

The light is received from the left, and indirectly from the right.

Ventilation. The total permanent inlet ventilation area measures 40 sq. in., or an average of 1.1 sq. in. per scholar, and consists of one Tobin's tube, 9in. \times 4½in.

The total permanent outlet ventilation area measures 42 sq. in., or an average of 1.2 sq. in. per scholar, and consists of two gratings in wall, 7in. \times 3in.

There is one open fire place.

There are four windows opening on swivels.

The large room on the first floor is also used for drilling lessons.

ST. ALBAN'S INFANT ELEMENTARY SCHOOL.

This Department consists of one main schoolroom and two classrooms.

Classroom No. 1 (Babies).

The average number present in June, 1903, was 93.

The total floor space measures 813.75 sq. ft., or 8.7 sq. ft. per scholar. The total cubic capacity is 14,647 cubic feet, or 157.5 cubic feet per head.

Lighting. The total lighting area measures 236 sq. ft., or between one-third and one-fourth of the floor space.

The light is received chiefly from behind, and the right.

Ventilation. The total permanent inlet ventilation area measures 162 sq. in., or an average of 1.7 sq. in. per scholar, and consists of four Tobin's tubes, 9in. \times 4½in., at a height of 6ft. from the floor.

The total permanent outlet ventilation area measures 144 sq. in., or 1.5 sq. in. per scholar, and consists of an opening in the ceiling, 12in. \times 12in.

There is cross ventilation.

Main Schoolroom No. 2.

The average number present in this room during June, 1903, was 106.

The total floor space measures 1,531.5 sq. ft., or an average of 14.4 sq. ft. per scholar. The total cubic capacity is 23,739 cubic feet, or 223.9 cubic feet per head.

Lighting. The total lighting area measures 190 sq. ft., or one-eighth of the floor space.

The light is from behind and the right.

Ventilation. The total permanent inlet ventilation area measures 81 sq. in., or .8 sq. in. per scholar, and consists of two Tobin's tubes, 9in. \times 4½in., at a height of 6ft. 6in. from the floor.

The total permanent outlet ventilation area measures 105 sq. in., or .9 sq. in. per scholar, and consists of five gratings fixed near the ceiling, each 7in. \times 3in.

There is cross ventilation. All the windows will open.

The average number present during June, 1903, was 69.

The total floor space measures 464 sq. ft., or between 6 sq. ft. and 7 sq. ft. per scholar. A great portion is in the form of a gallery. The total cubic capacity is 8,355 cubic feet, or 120.9 cubic feet per head.

Lighting. The total lighting area measures 107 sq. ft., or about one-fourth of the floor space.

The light is from behind and the right.

Ventilation. The total permanent inlet ventilation area measures 81 sq. in., or an average of nearly 1.2 sq. in. per scholar, and consists of two Tobin's tubes, 9in. \times 4 $\frac{1}{2}$ in.

The total permanent outlet ventilation area measures 144 sq. in., or over 2 sq. in. per scholar, and consists of one outlet in the roof 12in. \times 12in.

There is cross ventilation.

Recommendations.

- I. To improve the ventilation openings where necessary.

St. Alban's Higher Grade Boys' School.

This school was erected in 1888, and is a two-storey building of stone lined with brick. There are Boyle's ventilators fixed on the roof, which are connected with the first floor.

There is one playground, measuring 275 sq. yds., which is paved. There is no covered playground.

The sanitary conveniences are of the earthenware trough type. There are four compartments, and 19 linear feet of urinal, situated 3ft. from class-room No. 9 in the girl's school. There is no passage in front.

The internal surfaces of the school walls are bricked, and to a height of 4ft. 6in. are glazed brown bricks. The other parts of the wall are green.

The floors are boarded; swept daily and washed once a month.

The rooms are heated by hot water pipes.

The glass in the windows is plain, and the artificial lighting is by gas.

The partition between the classroom and the main room is of wood and glass.

The cloak-room, No. 11, is situated near the back entrance, measures 17ft. 3in. \times 12ft. 7in., and is lighted by three windows. There are about 300 pegs, arranged on walls and racks. In this cloak-room there is the lavatory, in which there are two lavatory basins. The waste pipe is trapped, and discharges over a gully outside.

This schoolroom consists of one large room and one class-room which are on the ground floor.

Main Schoolroom No. 13.

The average number present during September, 1903, was 39.

The total floor space measures 876.1 sq. ft., or an average of over 22.5 sq. ft. per scholar. The total cubic capacity is 17,522 cubic feet, or 449.2 cubic feet per head.

Lighting. The total lighting area measures 273 sq. ft., or one-third of the floor space.

The light is from the right and behind.

Ventilation. The total permanent inlet ventilation area measures 108 sq. in., or nearly 3 sq. in. per scholar, and consists of four Tobin's tubes, 9in. \times 3in., at a height of 6ft. 6in. from the floor.

The total permanent outlet ventilation area measures 249 sq. in., or an average of over 6.3 sq. in. per scholar, and consists of one opening in the ceiling, 12in. \times 12in. There are four gratings, three of which are 7in. \times 3in. and one 7in. \times 6in. Four windows open on swivels. There is one fireplace.

Classroom No. 12.

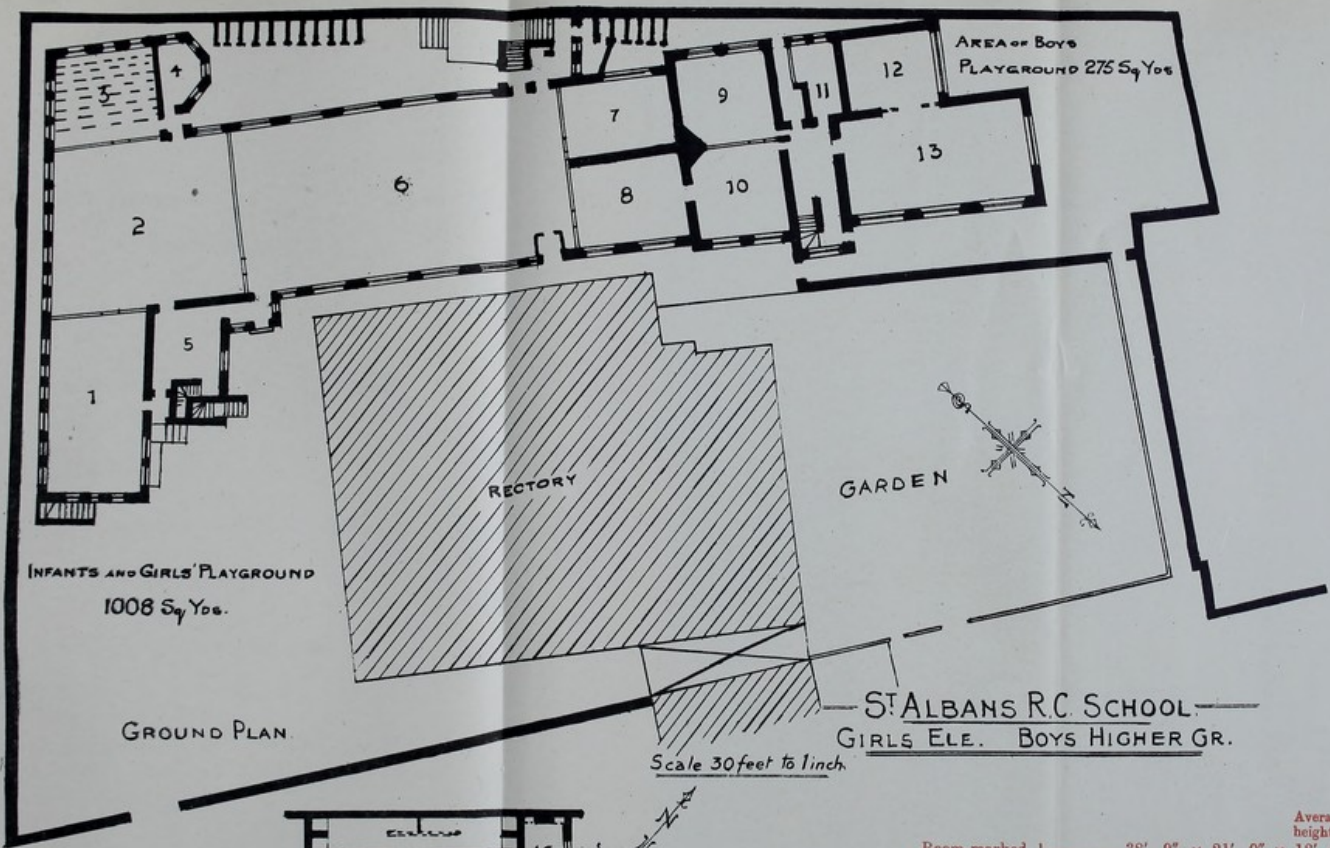
The average number present in September, 1903, was 24.

The total floor space measures 335 sq. ft., or an average of 13 sq. ft. per scholar. The total cubic capacity is 4,641 cubic feet, or 193.3 cubic feet per head.

Lighting. The total lighting area measures 74 sq. ft., or one-fourth of the floor space.

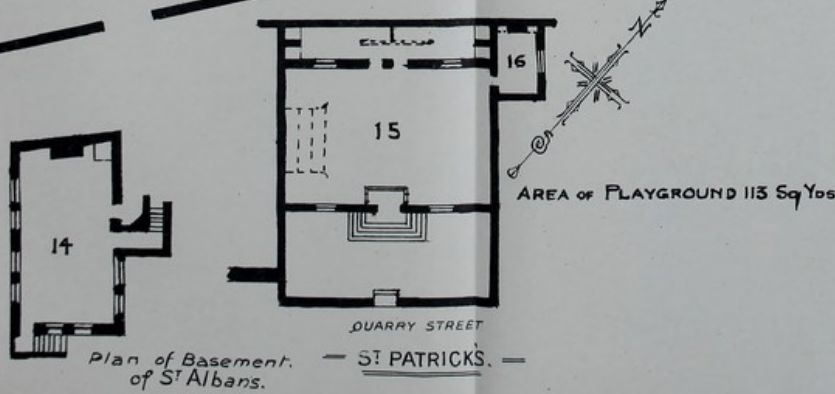
The light is from the left.

Ventilation. The total permanent inlet ventilation area measures 54 sq. in., or an average of over 2.2 sq. in. per scholar, and consists of two Tobin's tubes, 9in. \times 3in., at a height of 6ft. 6in. from the floor.



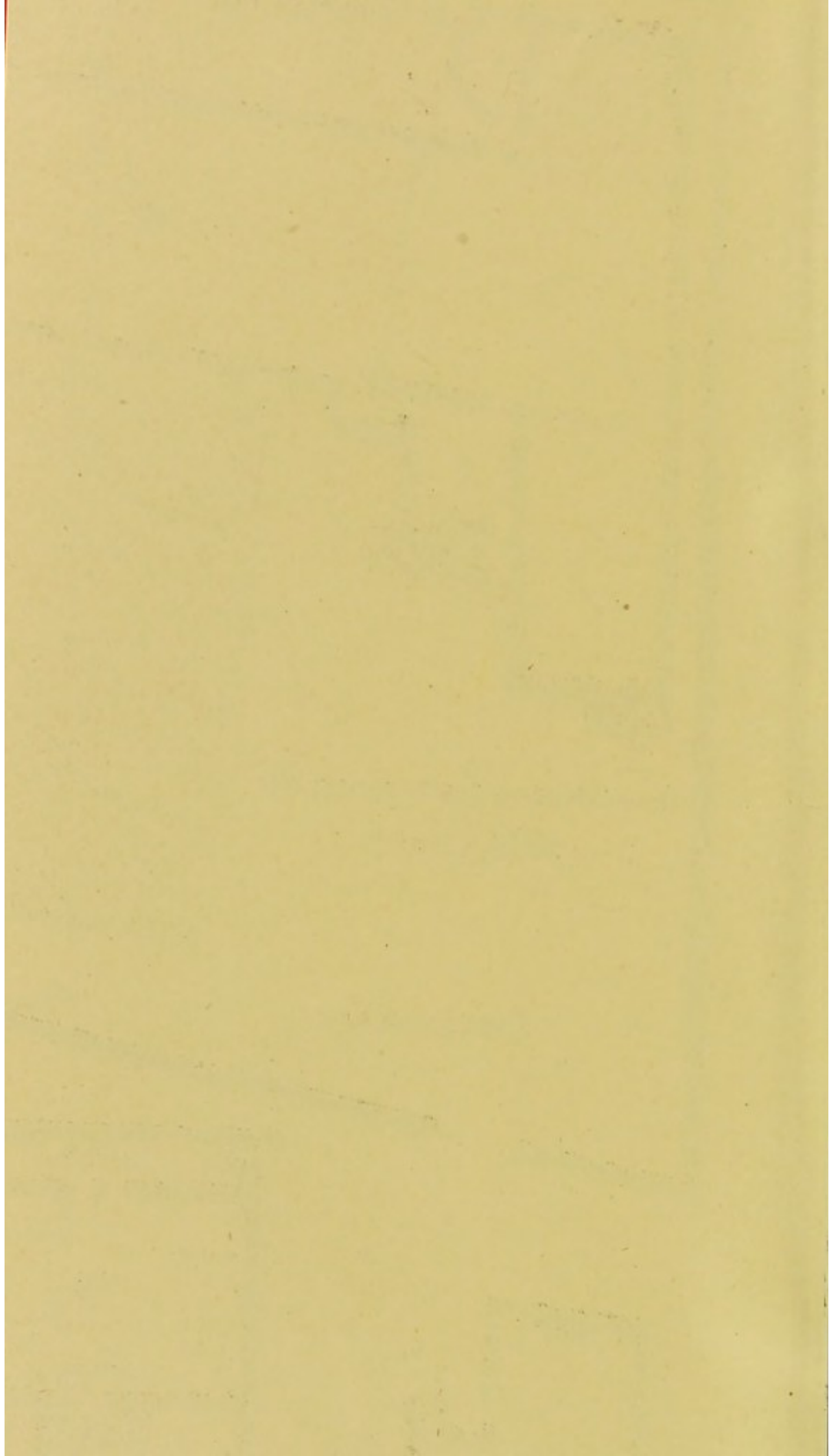
GROUND PLAN.

Scale 30 feet to 1 inch



Plan of Basement of St Albans.

Room marked	Dimensions	Average height.	Cubic feet.
1.....	38' 9" x 21' 0"	18' 0"	= 14647
Do. 2.....	42' 3" x 36' 3"	15' 6"	= 23739
Do. 3.....	23' 2 1/2" x 20' 0"	18' 0"	= 8355
Do. 4.....	14' 0" x 10' 4"		
Do. 5.....	20' 0" x 15' 10"		
Do. 6.....	74' 0" x 36' 0"	15' 6"	= 41292
Do. 7.....	24' 8" x 17' 8"	15' 6"	= 6754
Do. 8.....	24' 8" x 17' 8"	15' 6"	= 6754
Do. 9.....	21' 0" x 20' 0"	14' 5"	= 6055
Do. 10.....	20' 0" x 19' 6"	14' 5"	= 5622
Do. 11.....	17' 3" x 12' 7"		
Do. 12.....	19' 10" x 16' 11"	13' 10"	= 4641
Do. 13.....	40' 9" x 21' 6"	20' 0"	= 17522
Do. 14.....	38' 8" x 20' 7"	9' 2"	= 7287
Do. 15.....	44' 10" x 29' 10"	9' 8"	= 12926
Do. 16.....	14' 10" x 8' 10"	9' 4"	= 1223



The total permanent outlet ventilation area measures 42 sq. in., or an average of over 1.7 sq. in. per scholar, and consists of two gratings near the ceiling, 7in. x 3in., and an open fireplace.

Two windows open on swivels.

Recommendations.

- I. To improve the ventilation openings where necessary.

HOLY TRINITY SCHOOL.

This School is situated between Trinity and Cleaver Streets, opposite Primrose Bank. The infants' school was erected in 1843, and the boys' and girls' school in 1871.

Playgrounds.

There are two playgrounds, one for boys, measuring 249 sq. yds., and bounded by Trinity Street. The girls' playground is in Cleaver Street, and measures 258 sq. yds. These two playgrounds are completely separated from each other. The infants use the girls' playground.

The surface of each playground is well flagged, and slopes towards a surface gully. There is a water-tap in the girls' playground, for drinking purposes.

There is no covered playground.

Sanitary Conveniences.

There are three sanitary conveniences for the boys in their playground, and one for the male teachers. There are seven for the girls and infants, and one for female teachers. The compartments measure, 3ft. 6in. to the seat-board, and 2ft. 5in. wide. There is a passage in front of the compartments 3ft. 6in. wide, open to external air. There is a boarded partition in front, 5ft. high. There are no doors on the compartments. The floors are flagged.

The conveniences are on the trough system with a shaft carried up to the seat-board. These shafts are 1ft. 6in. deep.

The boys' conveniences are flushed by a 20-gallon cistern, with ball tap; and the girls are flushed by a 30-gallon cistern, also with a ball tap. They are flushed twice a week, and the floor and seat-boards are cleansed once a week.

There are 9 linear feet of urinals, the sides of which are of stone, and the backs of cement up to 3ft. from the floor. The floor is flagged and a channel has been formed sloping to a gully. There is a partition in front of these urinals, similar to that in front of the conveniences.

Drainage.

The drains were re-laid about four years ago. All the downspouts are connected, the waste pipes directly connected, and two are trapped.

Heating.

The heating is carried out by hot water pipes. In the centre of the infants' large room there are two radiators.

Walls.

The walls in the infants' school are plastered, and painted a chocolate colour up to 6ft., above this height pale green washed. The walls in the Boys' and Girls' Departments are boarded to a height of 3ft. 6in., and painted chocolate colour; above this, they are pale green.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept each night and washed three times a year.

Cloak-Rooms.

The girls' cloak-room, No. 6, is situated at the entrance to the Girls' School; it measures 17ft. 2in. \times 12ft. 2in., and is lighted by one window, 7ft. 6in. \times 2ft. 10in., with two hopper windows and a skylight, 5ft. \times 3ft. 6in.

There are 200 hooks on racks, about 6in. from the wall. These racks can be hoisted up to the ceiling. There is a fire-grate in this room for warming, with a guard attached.

The room is in direct communication with two class-rooms.

The infants' cloak-room, No. 12, is situated at the entrance to the Infants' School; it measures 15ft. 6in. \times 10ft. 7in., and is lighted by a glazed door, and a window over the door. There are 200 hooks, on racks, near the walls. This room is small, and clothes are heaped on one another. The upper pegs are too high for the young children to reach.

There are also clothes on one rack in the babies' room.

The boy's cloak-room, No. 5, is situated at the entrance to the Boys' School; measures 17ft. 2in. \times 11ft. 6in., and is lighted by one window 7ft. 6in. \times 2ft. 10in., with two hopper windows, and a skylight, 5ft. \times 3ft. 6in. There are 168 hooks, on racks, near the walls, which can be hoisted up. There is a fire-grate, with a guard.

Lavatory Accommodation.

There is a white glazed lavatory basin, boxed off, in each cloak-room. The waste pipe of the infants' lavatory basin is not trapped; the other waste pipes are trapped. All these waste pipes are directly connected to the drains.

There are nine rooms in this School. Nos. 8, 10, 11 are used by the infants; Nos. 3, 4 and 9, by the girls; and 1, 2, and 7 by the boys.

Rooms Nos. 7, 8, 9, 10, 11 are on a lower level than Rooms Nos. 1, 2, 3, 4, and cloakrooms 5 and 6.

The rooms, 7, 8, 9, 10, 11 are open to the apex, and form two valley roofs. The roof is supported by pillars in the infants' large room.

Room No. 1

Is a boys' class-room, measuring 19ft. 9in. \times 27ft. 0in., or 533 sq. ft. and the approximate number present during September, 1903, was 43, thus allowing 12.4 sq. ft. of floor space per head. The cubic capacity is 11,370 cubic feet, thus allowing 264.4 cubic feet per head.

Ventilation. The ventilation consists of seven hopper windows, 1ft. 10in. \times 1ft. 3in., one 7ft. from the floor, and six 9ft. from the floor; one domer window, 2ft. \times 3ft. 6in., opening on a swivel; one opening in ceiling, 4ft. \times 1ft., leading to cowl in roof, but this has been disused by boarding over the outlet.

There are no other ventilation openings.

Lighting. The total lighting area is 95 sq. ft., side light, and 36 sq. ft. from roof=131 sq. ft., or one-fourth of the floor space.

The light is from the right and above.

There are 15 gas jets.

The glass throughout the School is thick and semi-transparent.

Room No. 2

Is the boys' main room, measuring 38ft. 3in. \times 27ft. 0in., or 1,032 sq. ft., and the approximate number of boys present during September, 1903, was 92, thus allowing 11.2 sq. ft. of floor space per head.

The total cubic capacity is 21,601 cubic feet, or 234.7 cubic feet per head.

Ventilation The ventilation consists of four hopper windows, 1ft. 10in. \times 1ft. 3in., 7ft. from the floor; two domer windows, 2ft. \times 3ft. 6in., opening on swivels. (There are two openings in ceiling leading to a cowl in the roof 4ft. \times 1ft., but these are now disused.) There are no other ventilation openings.

Lighting. The total lighting area is 198 sq. ft.—54 sq. ft. being side light, and 144 sq. ft. from a skylight in the roof—which is equal to one-fifth of the floor space.

The light is from the front and above.

There are 30 naked gas jets.

Room No. 3

Is used by the girls, and measures 40ft. 3in. \times 27ft. 0in., or 1,086 sq. ft., and the approximate number present during September, 1903, was 123, thus allowing 8.8 sq. ft. of floor space per head. The total cubic capacity is 21,735 cubic feet, or 176.7 cubic feet per head.

Ventilation The ventilation consists of four hopper windows, 1ft. 10in. \times 1ft. 3in.; two domer windows in the roof, 3ft. 6in. \times 2ft. each opening on a swivel. There are two openings in the ceiling, 4ft. \times 1ft., leading to cowls on the roof, but these are boarded over. There are no other ventilation openings.

Lighting. The total lighting area is 216 sq. ft. (54 sq. ft. side light, and 162 sq. ft. light from roof), which is equal to one-fifth of the floor space.

The light is from the front and above.

There are 30 gas jets in this room.

Room No. 4

Is the girls' class-room, measuring 19ft. 9in. \times 27ft. 0in., or 533 sq. ft., and the approximate number present during September, 1903, was 60, thus allowing 8.8 sq. ft. of floor space per head. The total cubic capacity is 11,109 cubic feet, or 185 cubic feet per head.

Ventilation. The ventilation consists of seven hopper windows, 1ft. 10in. \times 1ft. 3in.; one domer window, 4ft. \times 2ft., opening on a swivel (one ventilator in ceiling, 4ft. \times 1ft., but this has been boarded across).

There is no other ventilation.

Lighting. The total lighting area is 132 sq. ft. (96 sq. ft. being side light, and 36 sq. ft. from roof), which is equal to one-fourth of the floor space.

The light is from the front and above.

Room No. 7

Is a boy's class-room, and is on a lower level (about 2ft.) than Rooms 1, 2, 3 and 4. It measures 31ft. 6in. \times 14ft. 0in., or 441 sq. ft., and the approximate number present during September, 1903, was 50, thus allowing 8.8 sq. ft. of floor space per head. The total cubic capacity is 7,938 cubic feet, or 158.7 cubic feet per head.

Ventilation. The ventilation consists of seven hopper windows, 1ft. 11in. \times 1ft. 1in., and 7ft. high from the noor, and two domer windows, 3ft. 6in. \times 1ft. 6in., opening on swivels.

There is no permanent ventilation. There is an iron stove with a chimney passing through the roof, and guarded all round by a wire guard.

Lighting. The total lighting area is 92 sq. ft. (52 sq. ft. side light, and 40 sq. ft. from roof), which is equal to about one-fifth of the floor space.

The light is from the left and above.

There are 20 gas jets in this room.

Room No. 8

Is an infants' class-room, measuring 31ft. 1in. \times 14ft. 0in., or 435 sq. ft., and the average number present during June, 1903, was 55, thus allowing 7.9 sq. ft. of floor space per head. The total cubic capacity is 7832 cubic feet, or 142.3 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, 1ft. 11in. \times 1ft. 1in., and two domer windows, 3ft. 6in. \times 1ft. 6in.

There is no permanent ventilation.

Lighting. The total lighting area is 66 sq. ft. (26 sq. ft. of side light, and 40 sq. ft. of light from the roof), which is equal to one-sixth of the floor-space.

The light is from behind and above.

There are 18 gas jets. The glass is semi-transparent.

Room No. 9

Is the girls' class-room, measuring 31ft. 6in. \times 14ft. 2in., or 446 sq. ft., and the approximate number present during September, 1903, was 46, thus allowing 9.7 sq. ft. of floor space per head. The total cubic capacity is 8,028 cubic feet, or 174.5 cubic feet per head.

Ventilation. The ventilation consists of seven hopper windows, 1ft. 11in. \times 1ft. 1in., 7ft. from the floor, and two domer windows, 3ft. 6in. \times 1ft. 6in., opening on swivels.

There is no permanent ventilation.

Lighting. The total lighting area is 92 sq. ft. (52 sq. ft. side light, and 40 sq. ft. from roof), which is equal to about one-fifth of the floor space.

The light is from the left and above.

There are 20 gas jets. The glass is semi-transparent.

Room No. 10

Is the babies' room. It measures 31ft. 1in. \times 14ft. 2in., or 440 sq. ft., and the average number present during June, 1903, was 60, thus allowing 7.3 sq. ft. of floor space per head. The total cubic capacity is 7,926 cubic feet, or 132 cubic feet per head.

There is a gallery in this room.

There is a wooden porch at the entrance of this room, as this is one entrance to the school.

Ventilation. The ventilation consists of six hopper windows, 1ft. 11in. \times 1ft. 1in., and two domer windows in the roof, 3ft. 6in. \times 1ft. 6in. each, opening on swivels.

There is no permanent ventilation.

Lighting. The total lighting area is 79 sq. ft. (39 sq. ft. side light, and 40 sq. ft. from above), which is equal to one-sixth of the floor space.

The light is from the left and above.

There are 20 gas jets.

The glass is semi-transparent.

Clothes are hung in this room.

Room No. 11

Is the infants' main room, and is situated in the centre of the school, with class-room around.

The only side light which it receives is a small amount from the class-rooms, the partitions of which are partly glazed.



This room measures 62ft. 7in. \times 29ft. 4in., or 1,835 sq. ft., and the average number present during June, 1903, was 140, thus allowing 13.1 sq. ft. of floor space per head. The total cubic capacity is 33,038 cubic feet, or 235.9 cubic feet per head.

Ventilation. The ventilation consists of eight domer windows, 3ft. 6in. \times 1ft. 6in., opening on swivels, and six large box tubes, 2ft. 4in. \times 8in. These tubes discharge air into the room 5ft. 6in. from the floor, and there are 9in. pipes laid under the floor, and an area has been formed outside in the yard with covered grating. This is the source of air supply to these tubes.

The permanent inlet ventilation consists of the six large box tubes, 2ft. 4in. \times 8in.

The total area of permanent inlet ventilation is 1,344 sq. in., thus allowing 9.6 sq. in. per head. It is stated that pieces of paper have been blown into the school from outside through these openings.

There is no permanent outlet ventilation.

Lighting. The total lighting is 193 sq. ft. (all from roof), which is equal to one-ninth of the floor space.

The light is from above.

There are 90 gas jets.

Recommendations.

- I. That the sanitary conveniences be improved.
- II. That the waste pipes discharge over gullies outside.
- III. That the interior of the Infant School be re-constructed, and ventilation made satisfactory.
- IV. That the thick glass be removed and clear glass substituted.

ST. PAUL'S SCHOOL.

This School was built in 1858, and extensions were carried out in 1884 and 1894. It is situated in St. Paul's Street, at the junction of New Park Street, and Alma Street. It is built of brick, and contains: Girls', Boys', and Infants' Departments. The girls and infants use the ground floor, and the boys the 1st floor. In this report the girls and Infants' Departments will be dealt with together.

Girls' and Infants' Playground.

The girls use the infants' playground. The girls' playground is situated in front of the school, but this part is only used for drilling,

and measures 332 sq. yds. The infants' playground measures 258 sq. yds., and 18 sq. yds. of this are covered. The ground slopes towards the school, and a channel is formed 6ft. away from the school, and the ground also falls from the school to the channel, which leads to a properly trapped gully.

The surface of the playground is partly flagged and asphalted. The former is very good, but the latter is out of repair.

This playground is separated from the boys', by a wall.

Sanitary Conveniences

The sanitary conveniences consist of McFarlane's iron troughs. They are flushed by hand three times a week. They are situated in the playground behind the school, and are about 6 yds. away from the nearest door or window. They are ventilated over the doors by openings 2ft. \times 6in., and the teachers' convenience is ventilated by an opening over the door, of 2ft. \times 14in. This is also the means by which the compartments are lighted. There is a passage in front of the compartments 3ft. wide, open to the external air, and the floor surface is flagged and channelled, leading to a trapped gully.

The girls' conveniences consist of six compartments, 4ft. long from door to seat-board, and 2ft. wide.

The infants' conveniences have two compartments, 4ft. \times 2ft., and 17 linear feet of urinals. The backs of the urinals are constructed of slate, and the floor is flagged and channelled. The urinal is flushed by means of a lin. perforated pipe, carried round the back.

Drainage.

The drainage appears to be good, and discharges into the sewer in New Park Street.

The downspouts are connected, and the waste pipes are not trapped.

Refuse.

There is an open ash-pit between the boys' conveniences, and the gable-end of No. 1 Alma Street. The ash-pit measures 3ft. 8in. \times 6ft. 0in. \times 6ft. 0in., and the cubical capacity is 132 cubic feet. The floor of the receptacle is 2ft. below the surface of the adjoining ground.

The ash-pit is under the back bedroom window of No. 1 Alma Street.

Cloak-Rooms.

The cloak-rooms for the girls and infants, and numbered 1 and 2, are situated in rooms leading from a passage at the back entrance.

The two cloak-rooms are similar in construction, and measure 16ft. 3in. x 8ft., and are lighted by one window, 6ft. x 4ft., of which 4ft. x 2ft. will open for ventilation. There is also one window opening in the passage over the door of each cloak-room, 3ft. x 3ft., thereby causing cross ventilation. In the floor of each cloak-room there is a grating along front of doors, through which the hot water pipes pass.

The floors are constructed of rectangular wooden blocks.

There are 204 hooks in each cloakroom, placed on one rack in centre of floors, and the remainder near the wall.

The cloakrooms are warmed by hot water pipes.

There is an enamelled wash-basin in each cloak-room, the waste pipes of which are not trapped, but discharge over a gully in the yard.

There are four rooms on the ground floor. Nos. 3 and 5 are used for the girls; No. 3 being a class-room, and Nos. 4 and 6 are used by the infants.

Walls.

The internal walls are boarded to a height of 5ft. from the floor, and above this height they are painted pink.

There is no evidence of dampness.

Floors.

The floors of the schoolrooms on the ground floor are boarded with tongued and grooved boards, and ventilated underneath. They are swept every night, and washed three times a year.

Heating.

The heating of the rooms is carried out by means of hot water pipes, and No. 6 Room has a fire-place in addition to the pipes, but there is no fireguard.

GROUND FLOOR.—Room No. 3

Is a class-room for the girls. The classes in this room change from the large room, and the maximum number stated to be present in this room at any time is 60, so for the purposes of calculation this number has been taken. The floor area of this room is 493 sq. ft., or 8.2 sq. ft. per head.

At the time of visit there were about 20 in the room, and on a previous visit 14 were present. The total cubic capacity is 8,258 cubic feet, or 137.6 cubic feet per head.

Ventilation. There are six windows, opening on hinges, without side shields, 2ft. 4in. \times 2ft. 2in., or 30 sq. ft., and six casement windows, 4ft. 8in. \times 2ft. 5in., or 67 sq. ft. Nearly three-quarters of the window space will open. The inlets on window-sills, 7in. \times 3in., or 42 sq. in., and an outlet in wall, 12in. from ceiling, of perforated iron grating, 12in. \times 12in., or 144 sq. in.

The permanent inlet-ventilation consists of two inlets in window-sills, or 42 sq. in., and one outlet in a wall, or 144 sq. in.

The permanent inlet ventilation is equal to .7 sq. in. per head, and the outlet to 2.4 sq. in. per head.

Lighting. The total lighting area is 91 sq. ft., or one-fifth of the floor space.

The direction of the light is from behind, and the glass is transparent, with the exception of the lower panes.

There are twelve naked gas jets.

Room No. 5

Is the girls' large room. The floor area is 1,755 sq. ft. The average number of girls present during September, 1903, can only be given for the whole Department, as separate numbers are not kept of the various rooms. If the floor area of Room No. 3 be added to the floor area of this room the floor space per head can be obtained for the two rooms. Floor space of this room, 1,755 sq. ft. + 493 sq. ft. = floor space of No. 3. Room = 2,248 sq. ft., and the average number present during September, 1903, was 202, which is equal to 11.1 sq. ft. per head. The total cubic capacity is 37,654 cubic feet, or 186.4 cubic feet per head.

Ventilation. The whole of the window space of this room can be opened for ventilation. Eighteen panes, 2ft. 4in. \times 2ft. 2in., open on hinges at the top, and 18 panes, 4ft. 8in. \times 2ft. 2in., as casement openings.

There are eight inlets in window-sills, 4in. \times 3in., or 96 sq. in. (the window-sills are 5ft. from the floor), and one outlet in the ceiling, 2ft. 3in. \times 1ft. 6in., or 486 sq. in.

The permanent ventilation of Rooms No. 3 and 5 is as follows—No. 3 Room, two inlets in window-sills, 7in. \times 3in., or 42 sq. in.—and No. 5 Room, eight inlets in window-sills, 4in. \times 3in., or 96 sq. in.; this being equal to .6 sq. in. per head.

The permanent outlet ventilation consists of outlet in ceiling, 2ft. 3in. \times 1ft. 6in., or 486 sq. in., carried through the room above by a

trunk leading to the cowl in the roof; and in Room No. 3, outlet in wall, 12in. \times 12in. = 144 sq. in.; which is equal to 3.1 sq. in. per head.

There is cross ventilation.

In calculating the amount of ventilation per head, Nos. 3 and 5 Rooms have been considered together, as the average attendance for each room cannot be obtained.

Lighting. Four classes receive the light from behind, and one from the left and right.

The total lighting area of No. 5 room is 273 sq. ft., which is one-sixth of the floor space.

The glass is transparent.

INFANTS' ROOM, No. 4.

The floor area is 1,650 sq. ft., and the average number of scholars present during June, 1903, was 126, thus allowing 13.1 sq. ft. per head. The total cubic capacity is 24,337 cubic feet, or 193.1 cubic feet per head.

Ventilation. There are 154 sq. ft. of window space, made to open for ventilation, by means of sash windows.

There is no permanent inlet or outlet ventilation.

There is cross ventilation.

Lighting. The total lighting area is 224 sq. ft., or one-seventh of the floor space.

One class receives the light from behind, one from the left and right, and one from behind and in front.

Seven windows have wire guards placed outside, which diminish the light to some extent, and also act as an obstacle to their cleaning.

There are 16 gas jets in this room.

Room No. 6

Is used by the babies' class. The floor area is 359 sq. ft. It is stated that the maximum number of children is 40, but at time of visit 56 were present, and on a previous visit 48 were present.

The average number present during June cannot be given, because the same class is not always in this room. Taking the average as 40 the floor space per head is equal to 9.0 sq. ft. At time of visit the floor space per head was equal to 6.5 sq. ft. The total cubic capacity is 5,310 cubic feet, or 132.7 cubic feet per head.

Ventilation. There are four sash window openings, 4ft. 0in. × 2ft. 4in., or 37 sq. ft., and an open fire-place, which has no guard.

There is no permanent ventilation in this room, with the exception of the fire-grate.

Lighting. The total lighting area is 56 sq. ft., which is equal to one-sixth of the floor space.

The light is from the front and left.

BOYS' DEPARTMENT.

Staircase.

The staircase is well lighted, easily ascended, the rise being about 5in., tread 11in. The treads are composed of a number of square blocks, to prevent scholars slipping. Studs are placed on the hand-rail to prevent boys sliding down.

Playground.

The playground measures 270 sq. yds. No portion of it is covered.

The surface is well flagged and slopes towards a channel 6ft. from the school, and the surface slopes from the school to the same channel. This channel leads to a properly trapped gully.

Sanitary Conveniences.

The sanitary conveniences are of the same type as those for the girls and infants, and are back to back with the girls'. There are four compartments, 2ft. 9in. wide and 2ft. 3in. to seat-board, and they are ventilated and lighted in the same way as the girls' compartments. There are 31 linear feet of urinals, constructed like those for the infants. The conveniences and urinals are flushed three times a week.

Cloak-Rooms.

The boys' cloak-room, No. 3, is situated in the room at the top of the staircase, and is in direct communication with the boy's large room. The size is 21ft. 2in. × 17ft. 0in. It is lighted by five sash windows.

There is a ventilating inlet over the door on the staircase, 2ft. 9in. × 4in., or 132 sq. in.

There are 258 hooks placed on two racks in the centre of the floor, and also against the walls.

The room is warmed by hot water pipes.

On entering the large room there is a small room on the left, which is called the clock room, in which there is a white enamel lavatory basin. The room is lighted by six windows, having an area of 74 sq. ft., 68 sq. ft. of which open as sash windows.

There are three rooms on this floor: Nos. 1 and 4 are class-rooms: No. 2 is the main room.

Walls.

The internal walls are similar to those on the ground floor.

Floors.

The floor is similar to that on the ground floor. The boards in the large room and class-room, No. 1, are very much worn and uneven. They are swept every night, and washed three times a year.

Heating.

Heating is carried out by means of hot water pipes.

Room No. 2

Is the main room, and measures 78ft. 6in. \times 30ft. 0in., or 2,355 sq. ft. The average number of children present during September, 1903, was 138, thus allowing 17.0 sq. ft. per head. The total cubic capacity is 36,502 cubic feet, or 264.5 cubic feet per head.

Ventilation. All the windows open, and there is cross ventilation.

There are also one outlet in the ceiling, 2ft. \times 2ft.; two circular openings in the ceiling, 2ft. in diameter; and two other outlets in ceiling, 1ft. \times 1ft.

There are no permanent inlet ventilators.

The permanent outlet ventilation consists of: One outlet in ceiling, carried by a shaft from ceiling, through attic, to a cowl on the roof; two circular openings in the ceiling, and two other outlets in the ceiling; the total area being 1,316 sq. in., or 9.5 sq. in. per head.

Lighting. The total lighting area is 205 sq. ft., or one-eleventh of the floor space.

The light is from behind, front, and right.

The glass is transparent.

Room No. 1

Is a class-room, measuring 27ft. 3in. \times 22ft. 3in., or 606 sq. ft., and the average number of children present during September, 1903, was 36, thus allowing 16.8 sq. ft. per head. The total cubic capacity is 8,890 cubic feet, or 246.8 cubic feet per head.

Ventilation. All the window space has been made to open for ventilation. There are five windows the top panes of which open on hinges (without side shields), and the lower panes are casement

windows. There are two ventilating openings in the ceiling, 1ft. 6in. \times 1ft. 6in. over gas pendants.

The permanent outlet ventilation consists of two openings in the ceiling, or 648 sq. in., which is equal to 18.0 sq. in. per head.

There are no permanent inlets, and there is cross ventilation.

Lighting. There are five windows in this room, having an area of 119 sq. ft., which is one-fifth of the floor space.

The light is received from behind, the left, and front, and indirectly from the right through the glass slides which separate this room from the large room.

The glass is transparent.

Room No. 4

Is a class-room for boys, measuring 30ft. \times 17ft. 9in., or 532 sq. ft., and the average number of scholars present during September, 1903, was 31, thus allowing 17.1 sq. ft. of floor space per head.

This room can be divided into two by drawing the shutters in the centre.

The total cubic capacity is 6,695 cubic feet, or 215.9 cubic feet per head.

Ventilation. The ventilation consists of 119 sq. ft. of window space, made to open, and two circular outlets in the ceiling (leading to cowl on roof), 2ft. in diameter, or 904 sq. in., thus allowing 29.4 sq. in. per head.

There is no permanent inlet ventilation.

Lighting. The total lighting area is 119 sq. ft., or one-fourth of the floor space.

The light is from the left and right.

The glass is transparent.

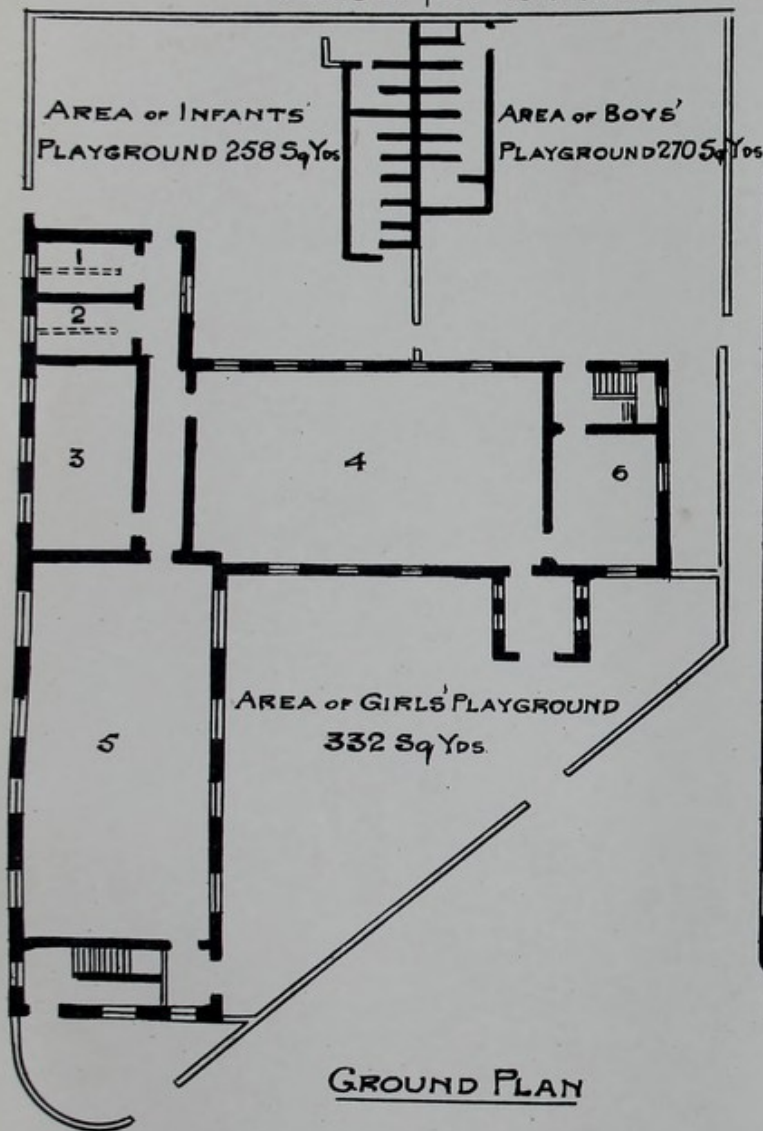
There are 12 naked gas jets.

Recommendations.

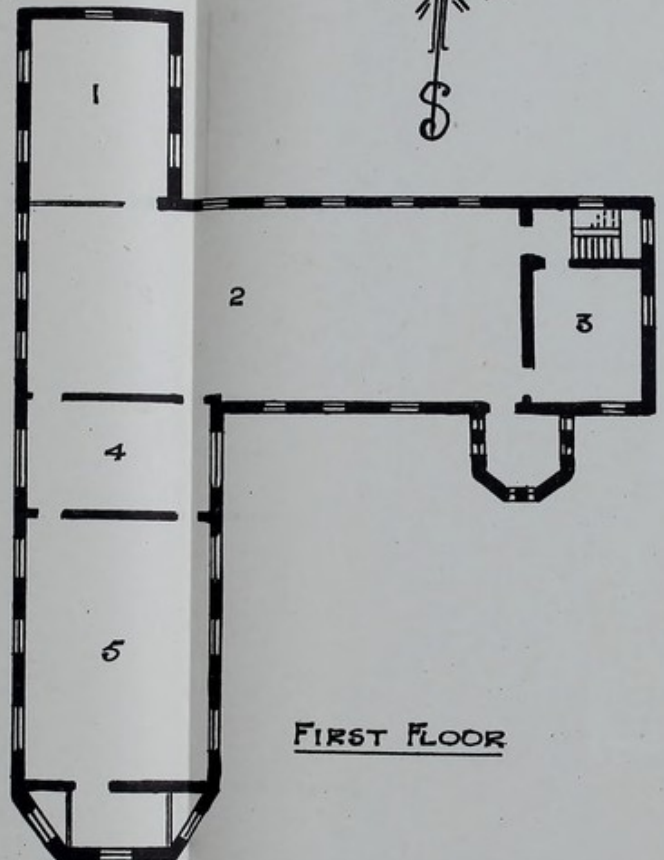
- I. To provide sufficient inlet ventilation openings throughout the school, and improve the outlet ventilation openings in the infants' and babies' rooms.
- II. To improve the lighting in No. 2 Room, used by the boys.
- III. To reconstruct the sanitary conveniences; providing more for the girls and infants.
- IV. To improve the means for depositing the dry refuse.
- V. To repair the playgrounds and floors where they are defective.

— ST. PAUL'S SCHOOL —

Scale 30 feet to 1 inch



GROUND PLAN



FIRST FLOOR

Room marked.	Average height.	Cubic feet.
1	16' 3" x 8' 0"	
2	16' 3" x 8' 0"	
3	29' 0" x 17' 0" x 16' 9"	= 8258
4	55' 0" x 30' 0" x 14' 9"	= 24337
5	58' 6" x 30' 0" x 16' 9"	= 29396
6	21' 2" x 17' 0" x 14' 9"	= 5310

Room marked	Average height.	Cubic feet.
1	27' 3" x 22' 3" x 14' 8"	= 8890
2	78' 6" x 30' 0" x 15' 6"	= 36502
3	21' 2" x 17' 0" x 15' 6"	= 5580
4	30' 0" x 17' 9" x 12' 7"	= 6695
5	40' 0" x 30' 0"	



ST. PATRICK'S INFANT SCHOOL.

There is no information as to the date of erection of this school.

The building is of brick, and is one storey.

There is one playground, measuring 113 sq. yds., which is flagged. No portion of it is covered.

The sanitary conveniences consist of four long hoppers adjoining the school wall.

The dry refuse is stored in an uncovered ash-tub.

The internal surfaces of the walls are boarded to a height of 4ft. 6in. from the floor, and the remainder plastered and coloured green.

The heating is by means of a stove (with a guard) placed near the centre of the room, the flue from which is connected to the chimney-breast, and which is about 15ft. in length. The fire-place has been built up.

The floor is boarded, and the glass in the windows is plain.

The artificial lighting is by gas.

The school consists of one room, and a teachers' room.

There is no special cloak-room, a rack with 72 pegs being placed in the school-room near the door.

The floor is swept daily and washed once a month.

The average number present during July, 1903, was 47.

The total floor space measures 1,337 sq. ft., part of which is in the form of a gallery. The average floor space for each scholar is 28.4 sq. ft. The total cubic capacity is 12,926 cubic feet, or 275 cubic feet per head.

Lighting. The lighting is by means of four sash windows, giving a total area of 180 sq. ft., or about one-seventh of the floor space.

Ventilation. There are four hopper window panes, 12in. x 9in., with covers.

There are two outlet ventilators in the ceiling, measuring 2ft. x 1ft., or 576 sq. in., thus allowing 12.2 sq. in. per head.

This school is in connection with St. Alban's School. The plans of these two schools are together.

There are four stone steps leading into this school from the yard.

Recommendations.

- I. To provide a covered receptacle for the dry refuse.
- II. To provide permanent ventilation openings where required.
- III. To provide a cloak-room.
- IV. It would be better if the heating could be carried out by hot water pipes than by a stove.

FURTHERGATE SCHOOL.

This School was erected in 1851, enlarged in 1882, and again enlarged in 1894. It is built of brick, in good condition, and is situated at the junction of Harwood Street and Furthergate.

Playgrounds.

There are two playgrounds, one for boys and one for girls, separated from each other. The boys' playground measures 307 sq. yds., and the girls' playground 84 sq. yds. The infants use both playgrounds. The surfaces are well flagged, and slope towards a surface gully. There is a glazed lean-to roof near the infants' large room in the girls' yard, and this is used as a covered playground.

Sanitary Conveniences.

There are five sanitary conveniences for the boys, and five for the girls. The boys' and girls' conveniences each consist of three Whittaker's troughs and two McFarlane's troughs. The Whittaker troughs are a form of pedestal fixed on an elliptical trough, directly underneath the pedestal; each basin is flushed separately. One automatic cistern flushes both girls' and boys' conveniences.

The McFarlane's are iron troughs with plug, which are objectionable.

These are flushed by hand twice a week, and the Whittaker's troughs are flushed once a day. Each compartment measures 3ft. to the seat-board, and is 2ft. 7in. wide. They are well lighted and ventilated. There is a passage in front of the compartments, 2ft. 9in. wide, open to the external air. The floors of the compartments and passages are flagged, and slope to a surface gully.

There are 5 linear feet of urinals for the boys adjoining their conveniences. The back and sides are constructed of stone, and there is a stone front to a height of about 1ft. 6in., forming a trough, leading to a trapped gully. The urinals are flushed by hand.

The sanitary conveniences are about 4 yards from the nearest door or window.

The superiority of the pedestal w.c., as adapted for schools, over the iron type, is well shown at this school, where the two varieties may be seen side by side.

Drainage.

The drainage appears to be in good order. The downspouts are directly connected to the drains, and the lavatory waste pipe in the cloak-room is directly connected.

Refuse.

The ash-pit forms part of a lumber-shed adjoining the boys' urinals, partitioned off by a stone flag. It measures 4ft. \times 7ft. \times 2ft., or 56 cubic feet. The floor is flagged, and on the same level as the adjoining ground.

Heating.

The heating is carried out by means of hot water pipes.

Cloak-Rooms.

There is a separate cloak-room for boys, girls, and infants.

Infants' Cloak-Room.

The infants' cloak-room is situated on the right, at the entrance to the school, in Harwood Street. It is lighted by six windows, 6ft. \times 2ft, of which two are sash windows. There are 180 hooks placed on racks, and against the walls. This cloak-room is warmed by hot water pipes, and there is an open fire-grate, with grating in chimney-breast. There are also two Tobin's tubes, measuring 9in. \times 3in., at a height of 6ft. from floor.

Boys' Cloak-Room.

The boys' cloak-room is situated on the second flight of stairs in the main staircase. It is lighted by four windows, 4ft. 6in. \times 2ft. 3in., and is ventilated by one hopper window, 1ft. 6in. \times 1ft. 9in., and one opening on swivel, 1ft. 6in. \times 1ft. 7in. There are 200 hooks placed on racks and against the walls. The room is warmed by hot water pipes. The floor is constructed of wooden blocks.

Girls' Cloak-Room.

The girls' cloak-room is situated immediately over the boys' cloak-room on the top flight of stairs. It is lighted by four windows, 4ft. 3in. \times 1ft. 9in., and is ventilated by one hopper window 1ft. 6in. \times 1ft. 9in., and one window opening on a swivel, and one opening in ceiling 1ft. 6in. \times 1ft. There are 200 hooks placed on racks and against the

walls. The room is heated by hot water pipes. The floor is constructed of concrete.

Lavatory Accommodation.

There are two white glazed lavatory basins partitioned off in the large room on the 1st floor, for the use of the teachers only. The waste pipes are trapped, and discharge over a downspout hopper-head.

There is one white glazed sink, boxed off, in the infants' cloak-room, the waste pipe of which is trapped, but directly connected to the drains.

There is one white glazed lavatory sink in the kitchen, the waste pipe of which discharges over gully inside. This kitchen is disconnected from the schoolroom.

Walls.

The walls are boarded to a height of 4ft. from the floor, and painted brown colour. Above this height they are rendered with plaster, and pink colour-washed.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath.

The first floor is much worn.

The floors are swept every night and washed twice a year.

Staircases.

There are two staircases, one at the entrance from Harwood Street.

This staircase is not well-lighted. The steps are constructed of wood, and the staircase is difficult to ascend, the riser being 8in. and the tread 11in. There is a hand-rail fixed.

The main staircase is between the boys' and girls' playground. There are four flights of stone steps and a handrail. The staircase is well lighted and easily ascended, the riser being 5in., and the thread 12in.

GROUND FLOOR.

There are four class-rooms on this floor. No. 1 is a class-room for the Mixed Department; and 2, 3, 4, for the infants.

Room No. 1.

This is a mixed class-room, measuring 31ft. x 20ft., or 620 sq. ft., and the average number of scholars present during September, 1903, was 42, thus allowing 14.7 sq. ft. of floor space per head. The total cubic capacity is 9,610 cubic feet, or 228.8 cubic feet per head.

Ventilation. The ventilation consists of two Sherringham windows, 1ft. 0in. \times 2ft. 3in., 10ft. from floor, and one opening on swivel at the top, 3ft. \times 2ft. 3in.; one grating in window-sill, 5½in. \times 4½in., 5ft from the floor, two outlets in the wall near the ceiling, one 12in. \times 12in., and one 12in. \times 9in., and two Tobin's tubes, 10in. \times 3in.

The permanent inlet ventilation consists of one grating in window-sill, and two Tobin's tubes, or 84 sq. in., thus allowing 2.0 sq. in. per head.

The permanent outlet ventilation consists of two outlets in outer walls, close to ceiling, total area of 252 sq. in., thus allowing 6 sq. in. per head.

Lighting. The total lighting area is 97 sq. ft., or one-sixth of the floor space.

The light is from the left and front.

Room No. 2

Is the infants' large room, measuring 32ft. 10in. \times 39ft. 3in., or 1,288 sq. ft., and the average number of infants present during June, 1903, was 120, thus allowing 10.7 sq. ft. of floor space per head. The total cubic capacity is 19,972 cubic feet, or 166.4 cubic feet per head.

Ventilation. The ventilation consists of three Sherringham windows, two 2ft. 3in. \times 1ft. 0in., 10ft. from floor, and one 1ft. 11in. \times 1ft. 4in. 10ft. from floor; two Sherringham valves, 11in. \times 3in., 7ft. from floor; and six outlets in walls, near the ceiling—three measuring 1ft. 6in. \times 12in., and three 12in. \times 9in. Three are on one side of the school and three on the other, which act as inlets and outlets respectively, so as to provide cross ventilation.

The permanent inlet ventilation consists of two Sherringham valves and three gratings in a wall near the ceiling.

The total area of permanent inlet ventilation is 390 sq. in., thus allowing 3.2 sq. in. per head.

The permanent outlet ventilation consists of three gratings near the ceiling, 1ft. 6in. \times 12in., or 648 sq. in., thus allowing 5.4 sq. in. per head.

Lighting. The total lighting area is 159 sq. ft., which is equal to nearly one-eighth of the floor space.

The light is from the left and right.

There are 20 gas jets.

Room No. 3

Is an infants' class-room, measuring 21ft. \times 15ft. 7in., or 327 sq. ft., and the average number of infants present during June, 1903, was 26, thus allowing 12.6 sq. ft. of floor space per head. The total cubic capacity is 5,072 cubic feet, or 195 cubic feet per head.

Ventilation The ventilation consists of one Sherringham window, 1ft. 0in. \times 2ft. 3in., 10ft. from floor; one opening on a swivel, 3ft. \times 2ft. 4in., at the top, one outlet in the wall near the ceiling, 1ft. 6in. \times 12in., and one Tobin's tube 10in. \times 3in.

The permanent inlet ventilation consists of one Tobin's tube, or 30 sq. in., thus allowing 1.1 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the wall near the ceiling, or 216 sq. in., thus allowing 8.3 sq. in. per head.

Lighting. The total lighting area is 76 sq. ft., or one-fourth of the floor space.

The light is from the left.

There are four gas jets.

Room No. 4

Is the gallery room, measuring 21ft. \times 15ft. 4in., or 321 sq. ft., and the average number of infants present during June, 1903, was 40, thus allowing 8.0 sq. ft. of floor space per head. The total cubic capacity is 4,991 cubic feet, or 124.7 cubic feet per head.

Ventilation The ventilation consists of one hopper window, 1ft. 0in. \times 2ft. 3in., 10ft. from the floor, and one opening on a swivel, 3ft. \times 2ft. 4in. at the top; two Tobin's tubes, 9in. \times 3in.; one 4ft. 6in. from the top of the gallery, and one 7ft. from floor; three gratings in wall, 1ft. 6in. \times 1ft. 0in., and one grating in a window-sill, 5 $\frac{1}{2}$ in. \times 4 $\frac{1}{2}$ in.

The permanent inlet ventilation consists of two Tobin's tubes, and one grating in window-sill, or a total area of 78 sq. in., thus allowing 1.9 sq. in. per head.

The permanent outlet ventilation consists of three gratings in the wall, 1ft. 6in. \times 1ft. 0in., or a total area of 648 sq. in., thus allowing 16.2 sq. in. per head.

Lighting. The total lighting area is 83 sq. ft., which is equal to nearly one-fourth of the floor space.

The light is from the left.

There are four gas jets.

FIRST FLOOR.

There are three schoolrooms on this floor: Nos. 5, 6, 7. To enter No. 7 room from the large room one must descend four steps.

Room No. 5

Measures 31ft. \times 20ft., or 620 sq. ft., and the average number of scholars present during September, 1903, was 78, thus allowing 8.1 sq. ft. of floor space per head. The total cubic capacity is 9,300 cubic feet, or 119.2 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 2ft. 3in. \times 1ft. 6in., 8ft. from the floor; two gratings in window-sills, 5½in. \times 4½in.; two Tobin's tubes, 9in. \times 3in., 7ft. 6in. from the floor; four outlets in walls near the ceiling, 12in. \times 12in., and one outlet in the ceiling, 3ft. \times 1ft.

The permanent inlet ventilation consists of two gratings in window-sills; two Tobin's tubes, 7ft. 6in. from the floor. The total area of permanent inlet ventilation is 102 sq. in., thus allowing 1.3 sq. in. per head.

The permanent outlet ventilation consists of four outlets in the wall, near the ceiling, 12in. \times 12in., and one outlet in the ceiling (3ft. \times 1ft.). The total area of permanent outlet ventilation is 1,008 sq. in., thus allowing 12.9 sq. in. per head.

Lighting. The total lighting area is 110 sq. ft., or one-fifth of the floor space.

The light is from the left and front.

There are 8 gas jets.

Room No. 6

Is the large mixed room, measuring 2,055 sq. ft., and the average number of scholars present during September, 1903, was 242, thus allowing 8.4 sq. ft. of floor space per head. The total cubic capacity is 29,632 cubic feet, or 127.4 cubic feet per head.

Ventilation. The ventilation consists of five hopper windows, 1ft. 6in. \times 2ft. 3in., 8ft. from the floor; one opening, on a swivel, 3ft. \times 2ft. 3in., 7ft. from the floor; two Sherringham valves, 11in. \times 3in., 7ft. from the floor; and eight gratings in walls, near the ceiling, 12in. \times 12in., two of which act as inlets; three outlets in ceiling, two 1ft. 6in. \times 12in., and one 3ft. \times 1ft.

The permanent inlet ventilation consists of two Sherringham valves, and two gratings in the wall, near the ceiling. The total area of permanent inlet ventilation is 354 sq. in., thus allowing 1.4 sq. in. per head.

The permanent outlet ventilation consists of six gratings in the wall; three outlets in the ceiling. The total area of permanent outlet ventilation is 1,728 sq. in., thus allowing 7.1 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 353 sq. ft., which is equal to nearly one-fifth of the floor space.

The light is from the left, right and behind.

There are six incandescent lights, and 16 naked lights for artificial lighting.

Room No. 7

Is a class-room measuring 25ft. 0in. \times 16ft. 8in., or 416 sq. ft., and the average number of scholars present during June, 1903, was 37, thus allowing 11.2 sq. ft. of floor space per head. The total cubic capacity is 6,250 cubic feet, or 168.9 cubic feet per head.

Ventilation. The ventilation consists of two sash windows, 6ft. 3in. \times 2ft.; one outlet in the ceiling, 12in. \times 12in., and one grating in the chimney-breast, 6in. \times 9in.

The permanent inlet ventilation consists of one grating near the floor, 5in. \times 4in., or 20 sq. in., thus allowing .5 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, 12in. \times 12in., and one grating in chimney-breast, 6in. \times 9in. The total area of permanent outlet ventilation is 198 sq. in., thus allowing 5.3 sq. in. per head.

There is cross ventilation. but it is difficult in windy weather to ventilate this room without draught, on account of its shape.

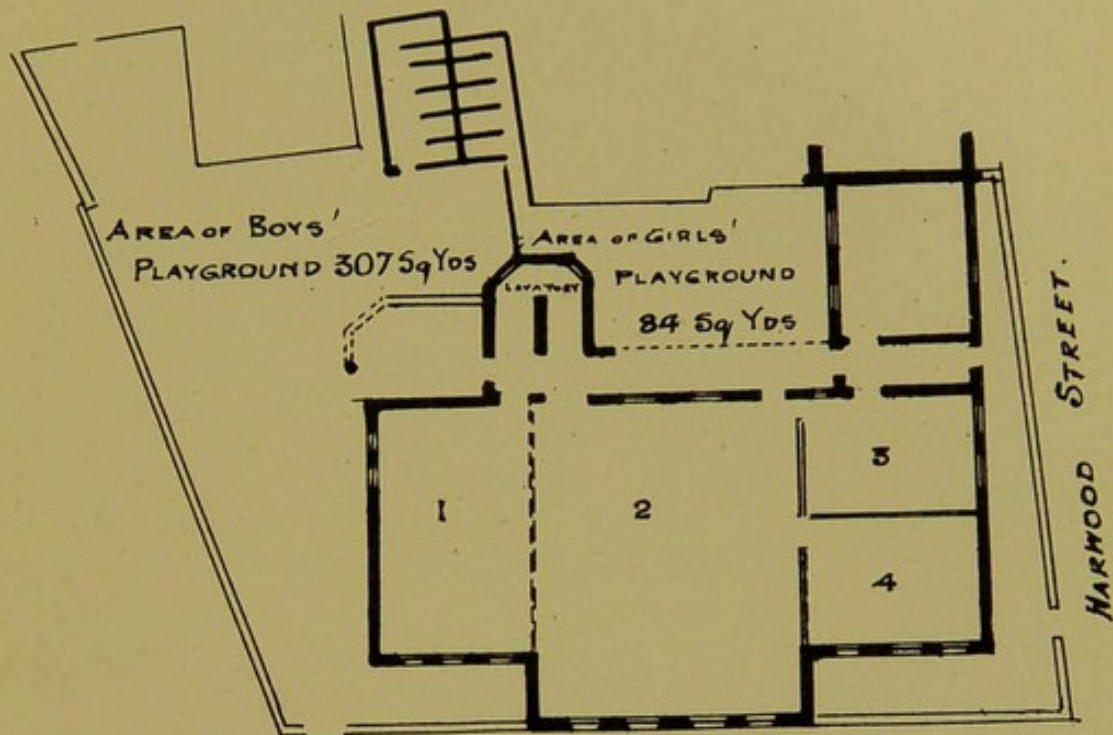
Lighting. The total lighting area is 82 sq. ft., which is equal to nearly one-fifth of the floor space.

The light is from the left and right.

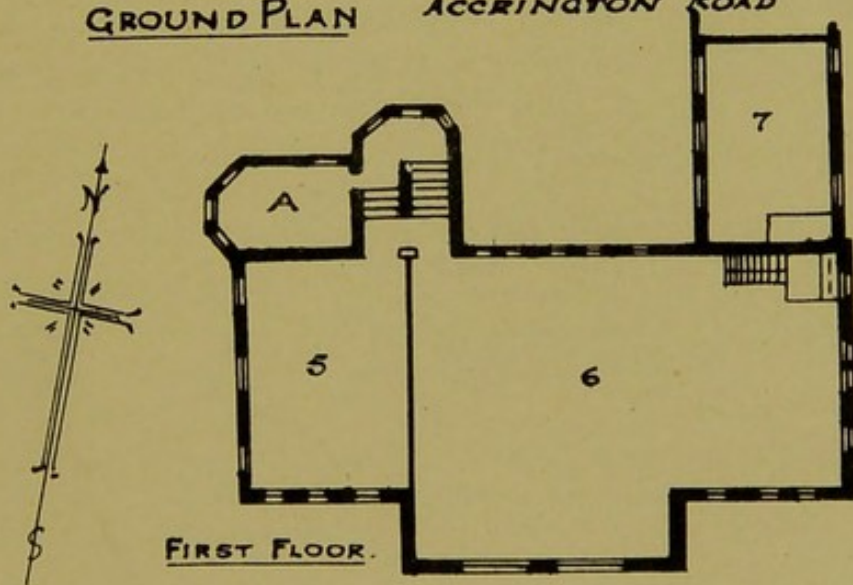
There are four gas jets.

Recommendations.

- I. To improve the inlet ventilation openings in Rooms 3, 4, 5, 6 and 7.
- II. To arrange that rooms 5 and 6 shall not contain more than 62 and 205 scholars respectively.



GROUND PLAN ACCRINGTON ROAD



FIRST FLOOR.

FURTHERGATE SCHOOL

Scale 30 feet to 1 inch

Room Marked.	Average height.	Cubic feet.
1	31' 0" x 20' 0" x 15' 6"	= 9610
2	32' 10" x 39' 3" x 15' 6"	= 19972
3	21' 0" x 15' 7" x 15' 6"	= 5072
4	21' 0" x 15' 4" x 15' 6"	= 4991
5	31' 0" x 20' 0" x 15' 0"	= 9300
6	54' 0" x 31' 0" x 15' 0"	= 25110
	31' 6" x 9' 0" x 15' 0"	= 4252
7	25' 0" x 16' 8" x 15' 0"	= 6250

Two Cloak Rooms Lettered A.



- III. To re-construct the remaining McFarlane's sanitary conveniences on the pedestal system.
- IV. To disconnect the lavatory waste pipes from the drains.
- V. To repair the floor on the first floor.

ST. BARNABAS' MIXED SCHOOL.

This school was built in 1862, originally as a music-hall. It is practically a two storey building, having a gallery all round the interior. It is built of brick. There is an area on the west and north sides, $2\frac{1}{2}$ yards wide, and the surrounding land is about 4ft. higher. The floor of this area is asphalted, and is about 1ft. 6in. higher than the floor of the schoolroom. On the east side of the school is the Church, a narrow passage dividing them.

Playgrounds.

There are two playgrounds, 873 sq. yds. The boy's playground is behind the infants' new school, and the girls' behind the mixed school. The infants' play-time is not the same as the mixed school; hence the infants use both playgrounds.

The surface of the ground falls towards the school; it is unflagged, of a clay soil, and is in a bad condition.

Between the boys' playground and the girls' there are four steps, which are dangerous for the infants.

The playgrounds are partly separated. No portion is covered.

Sanitary Conveniences.

Consist of McFarlane's iron troughs, and pails. Both are objectionable. The pails are emptied about every fortnight, and the troughs are flushed once or twice a week.

They are situated at the back of the school, near the boundary wall in Belle Vue Street, and are 13 yds distant from the nearest door or window of the school.

The pail closets were placed when the school was built as a music-hall, and the McFarlane's were fixed about seven years ago.

They are constructed of brick, and there is a passage in front of the girls' compartments, open to the external air. The boundary wall in front is 8ft. high. This passage is flagged, and slopes towards the surface of the yard.

There are 11 linear feet of urinals opposite the compartments. The sides of the urinals are stone, the backs are rendered with

cement. The floor is flagged, but no channel has been formed. The flushing of these urinals is carried out by hand.

The roof of the conveniences is defective.

There are three McFarlane's troughs, and three tub-closets for the boys. There are four McFarlane's and three tub-closets for the girls. The infants use any of these.

Each compartment is 3ft. 6in. \times 2ft. 0in., with one exception, 3ft. 6in. \times 1ft. 6in.

The compartments are ventilated by rectangular openings over the doors, and this is the only means by which light has access when the doors are shut.

Drainage.

The drainage appears to be in good condition. All downspouts are connected to the drains.

Refuse.

There is a wooden receptacle for the ashes, which is placed under a temporary wooden shed adjoining the boys' conveniences.

Cloak-Room.

The cloak-room, No. 6, is a passage in which there is a staircase leading to the gallery upstairs.

The floor area of the cloak-room is 26ft. 6in. \times 9ft. 9in. It is fairly well lighted, and the glass is coloured.

It opens above into the large schoolroom. There is an inlet ventilator in the wall—Tobin's tube, 9in. \times 3in.

There are about 100 hooks, placed on racks in the centre of the floor, and against the wall. This accommodation is insufficient.

The floor is boarded, and the room is not heated.

There is a small room adjoining this cloak-room in which a lavatory is placed. The room is very dark, being lighted by a small window, 2ft. \times 2ft., which does not open. It is also used sometimes as a cloak-room, owing to the proper cloak-room being small.

The lavatory waste pipe is trapped, and discharges over a gully in the yard.

Heating.

The heating is carried out by low pressure, hot water pipes placed round each room.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath.

One class uses the gallery as an entrance to the class-room from the staircase.

The floors are swept every night, and washed once a year.

Walls.

The inside walls are boarded to a height of 5ft. from the floor, and painted a stone colour; above this height they are rendered with plaster, and painted a pink colour.

There are four rooms in this school, and also a Parish Room, which is used for drilling and reading.

Large Room No. 5

Measures 58ft. 9in. \times 36ft., or 2,115 sq. ft., and the average number of children present during September, 1903, was 129, thus allowing 16.4 sq. ft. of floor space per head. The total cubic capacity is 31,044 cubic feet, or 240.6 cubic feet per head.

Ventilation The ventilation consists of four hopper windows, 8ft. from the floor, 3ft. 9in. \times 1ft. 7in., or 23 sq. ft. in area; five segmental openings (at the top of the windows), having an area of 13 sq. ft., and four Tobin's tubes (9in. \times 3in.), at a height of 8ft from the ground. There is a perforated grating in the ceiling extending the length of the room (11in. wide, area 7,392 sq. in.), and one square ventilator in ceiling, 3ft. \times 3ft. There are also two segmental window openings in gallery, 4 sq. ft.

There is cross ventilation.

The permanent inlet ventilation consists of four Tobin's tubes, or 108 sq. in.

The permanent outlet ventilation consists of perforated grating, 11in. wide, running the whole length of the room, or 7,392 sq. in., and one square ventilator in ceiling, or 1,296 sq. in.

The total area of permanent inlet ventilation is 108 sq. in., or .8 sq. in. per head.

The total area of permanent outlet ventilation is 8,688 sq. in., or 67.3 sq. in. per head.

Lighting. There are nine windows in this room, having an area of 154 sq. ft., or one-thirteenth of the floor space.

For four classes the light is from the back and front, and for one class from left and right.

The glass is transparent, but wire guards are attached to the windows outside, which diminish the light.

There are 55 naked gas jets.

Room No. 4

Is a class-room on ground floor, and situated against the gable-end of the Church. It measures 36ft. \times 18ft., or 608 sq. ft., and the average number of children present during September, 1903, was 37, thus allowing 16.4 sq. ft. of floor space per head. The total cubic capacity is 7,560 cubic feet, or 204.3 cubic feet per head.

Ventilation. The ventilation consists of four segmental window openings similar to those in the large room; one sash window (4ft. 4in. \times 3ft. 0in.), and one hopper window, 2ft. 4in. \times 1ft. 4in., at 6ft., and one on hinges, at 10ft. from the floor; one Tobin's tube, 7ft. from the floor (9in. \times 3in.), and two perforated gratings in the wall adjoining the church (6in. \times 4in.), and near the ceiling.

The permanent inlet ventilation consists of one Tobin's tube (9in. \times 3in.), area 27 sq. in., thus allowing .7 sq. in. per head.

The permanent outlet ventilation consists of two perforated gratings in the wall adjoining the Church, 6in. \times 4in., area 48 sq. in., thus allowing 1.3 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area of this room is 114 sq. ft., but about 33 sq. ft. of this are not much use for lighting, as two windows face the gable-end of the Church, which is only about 2ft. distant. The lighting is about one-seventh of the floor space, after deducting the 33 sq. ft. In spite of this proportion the room is rather dark.

The light is from the left, and slightly from right.

There are 18 naked gas jets.

Room No. 12

Is situated in the gallery at the east end of the school.

The room measures 36ft. \times 18ft. 6in., or 666 sq. ft., and the average number of children present during September, 1903, was 72, or 9.2 sq. ft. per head. The total cubic capacity is 7,770 cubic feet, or 107.9 cubic feet per head.

This room is entered at the east end of the large room.

The staircase is cased from No. 4 room, is well lighted, and easily ascended. It is wood.

Ventilation. The ventilation is by means of two segmental window openings having an area of 5 sq. ft., and two hopper windows, 3ft. 1in. \times 1ft. 9in., or 10 sq. ft., 7ft. 6in. from the floor; a perforated

grating in the ceiling, 10ft. x 11in., and one Tobin's tube, 9in. x 3in., at 7ft. from the floor.

The permanent inlet ventilation consists of one Tobin's tube, 9in. x 3in., or 27 sq. in., thus allowing .4 sq. in. per head.

The permanent outlet ventilation consists of perforated grating along the ceiling, or 1,320 sq. in., thus allowing 18.3 sq. in. per head

There is cross ventilation.

Lighting. There are four windows in this room having an area of 64 sq. ft., or nearly one-tenth of the floor space.

The light is from the left and right.

There are four naked gas jets.

Room No. 13

Is also situated in the gallery above class-room No. 5. There are 714 sq. ft. of floor space, and the average number of children present during September, 1903, was 69, thus allowing 10.3 sq. ft. of floor space per head. The total cubic capacity is 8,330 cubic feet, or 120.7 cubic feet per head.

The scholars enter this room by the staircase in cloak-room, and pass along the gallery.

There is a gas cooking-stove in this room.

Ventilation. The mode of ventilation is the same as that in room No. 12.

The total area of the permanent inlet ventilation is equal to .4 sq. in. per head.

The total area of permanent outlet ventilation is equal to 32.2 sq. in. per head.

There is cross ventilation.

Lighting. There are four windows in this room, having an area of 64 sq. ft., which is equal to one-eleventh of the floor space.

The light is from the left and right.

There are four naked gas jets.

Parish Room

Marked No. 2 on the plan, is situated under the Church, and is used for drilling and reading.

The area of the floor is 662 sq. ft. There were 74 present in the room at the time of visit, thus allowing almost 8.9 sq. ft. per head.

This room is not considered to be part of the day school.

The total cubic capacity is 8,281 cubic feet, or 111.9 cubic feet per head.

Ventilation. There are two windows opening on hinges, 5ft. from the floor, 2ft. 6in. \times 1ft. 6in., and two window openings acting as outlets, 2ft. 6in. \times 1ft. 6in., as hoppers. There are two slide ventilators in window-sills, 8in. \times 4in., and openings in walls, near the ceiling, three of which ventilate under the floor of the Church.

The permanent inlet ventilation consists of two ventilators in window-sills, or 64 sq. in., thus allowing .8 sq. in. per head.

The outlet ventilation consists of five openings in walls, close to ceiling, 6in. \times 6in., or 180 sq. in., thus allowing 2.4 sq. in. per head.

Lighting. The total lighting area is 94 sq. ft., or one-seventh of the floor space.

The glass is coloured and there are small lead lights.

INFANTS' SCHOOL.

This school was erected in 1898. It is built of brick, situated in Johnston Street, in the same curtilage as the mixed school. The ground floor is higher than the surrounding ground, and is entered by steps leading from the yard in front of the mixed school. The building is in excellent condition.

Playgrounds.

The infants use the boys' and girls' playgrounds, as mentioned in the description of the mixed department.

Sanitary Conveniences.

There are no separate conveniences for the infants, as already mentioned.

Drainage.

The drainage appears to be in good condition. The downspouts discharge over gullies, except one on the footpath in Johnston Street. The waste pipes are trapped, discharge into one common pipe, and thence over a gully in the yard. The drainage pipe runs on one side of the school, through two chambers, and the drains are disconnected by means of a trap, placed in one chamber.

Refuse.

The refuse is placed in the same receptacle as the one used for the mixed school.

Cloak-Room.

The cloak-room, No. 9, is situated at the entrance. The room measures 30ft. 6in. \times 15ft., and is lighted by two windows (4ft. 8in. \times 2ft. 8in.); one over door (3ft. \times 2ft.), and two skylights (4ft. \times 3ft.). The total lighting area is 42 sq. ft., or one-tenth of the floor space. Indirect light is received from the schoolrooms through the top portion of the doors, which are glazed.

The room is ventilated by two casement windows, 4ft. 8in. \times 2ft. 8in.; two hopper windows, 6ft. from the floor, and two hinge windows; one outlet in the ceiling, 2ft. 6in. \times 2ft. 6in., and four gratings in window-sills, 8in. \times 4in., made to open and shut.

The floor is concrete, and hot water pipes are placed round the room.

There are six racks in the centre of the floor, upon which are placed 180 hooks, and 38 hooks are placed against the walls.

There are three lavatory basins, the waste pipes of which are trapped, discharge in one common pipe, and then over a gully in the yard.

Heating.

The heating of the rooms is carried out by low pressure hot water pipes, being placed round the rooms.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept every night, and washed once a year.

Walls.

The walls of the infants' school are rendered with plaster, and painted a slate colour. There is no evidence of dampness.

There are three rooms in this department; the class-room on the left of the entrance is used by the babies.

Large Room No. 11.

The floor area of this room is 1,184 sq. ft., and the average number of children present in June, 1903, was 137, thus allowing 8.6 sq. ft. of floor space per head. The total cubic capacity is 21,317 cubic feet, or 155.8 cubic feet per head.

Ventilation. There are 18 windows opening, eight (3ft. 4in. \times 1ft.) as Sherringham hoppers, 6ft. from the floor, and two casement windows (2ft. 4in. \times 1ft. 6in.), and eight hinge windows.

There are 16 slide ventilators in the window sills, 8in. \times 4in., which open and shut, about 5ft. from the floor, and two outlets in the ceiling, leading to a Boyle's cowl on the roof, 3ft. \times 3ft., which will open and shut.

The permanent inlet ventilation consists of 16 slide ventilators, in window-sills, 8in. \times 4in. = 512 sq. in., or 3.7 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the ceiling, 3ft. \times 3ft. = 2,592 sq. in., or 18.9 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 213 sq. ft., which is equal to one-fifth of the floor space, and is received from the left, right, and back.

This room is divided into two parts by a curtain.

There are 24 gas jets.

Classrooms Nos. 8 and 10

Are similar to one another in construction.

The floor area of each room is 508 sq. ft. The average number present during June, 1903, in room 10, was 40, or 12.7 sq. ft. of floor space per head. The total cubic capacity is 7,119 cubic feet, or 177.9 cubic feet per head.

The average number of babies present in room 8 was 30, or 16.9 sq. ft. of floor space per head, and the total cubic capacity is 7,373 cubic feet, or 245.7 cubic feet per head.

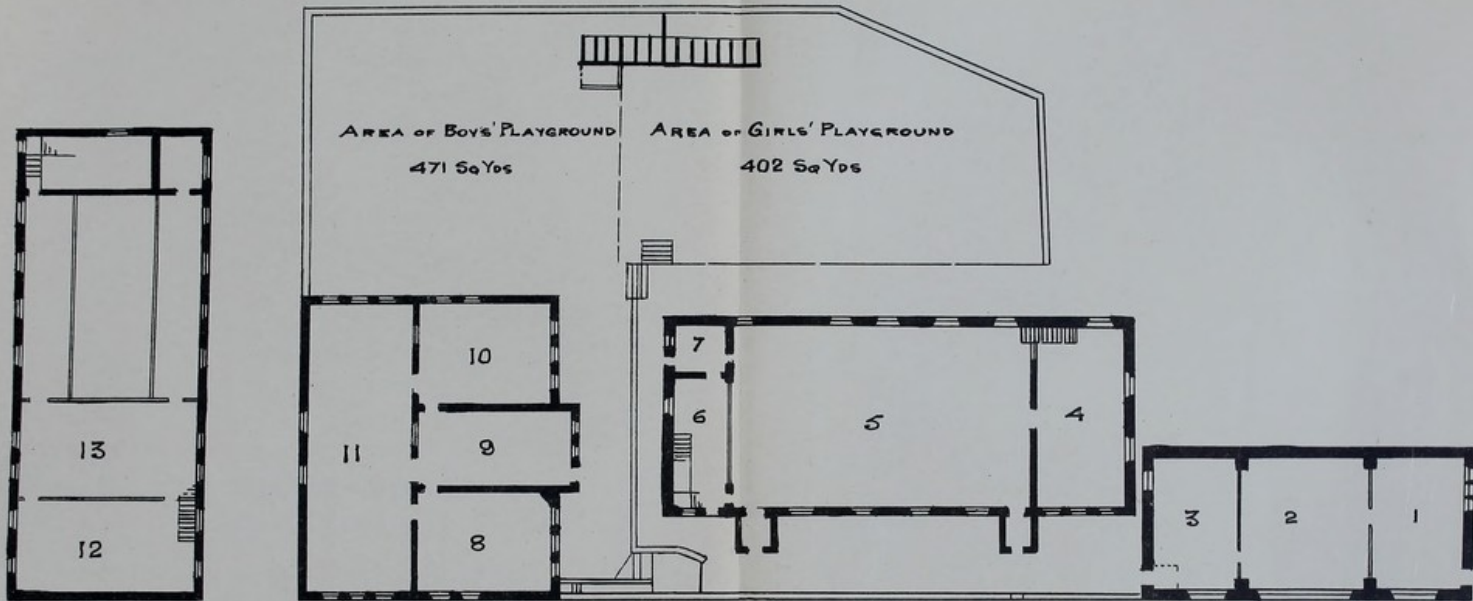
Ventilation There are five windows opening 5ft. 6in. from the floor, which act as Sherringham inlets (3ft. 7in. \times 1ft.), and five window openings, 3ft. 4in. \times 1ft. 8in., which act as outlets. There are 10 slide ventilators in window-sills, 8in. \times 4in., and one outlet in the ceiling, leading to a Boyle's cowl on the roof, 3ft. \times 3ft., which will open and shut.

This ventilation is the same for each class-room.

There is slight cross ventilation.

The permanent inlet ventilation consists of 10 slide ventilators in window-sills, or 320 sq. in. The amount of permanent inlet ventilation per head for each class-room: No. 10, 8 sq. in.; No. 8 (babies'), 10.6 sq. in.

The permanent outlet ventilation consists of one outlet in the ceiling, or 1,296 sq. in., thus allowing for class-room: No. 10, 32.4 sq. in. per head, and for class-room No. 8, 43.2 sq. in. per head.

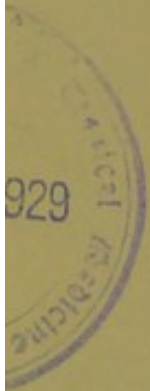


GALLERY PLAN

— ST. BARNABAS' SCHOOL —
Scale 30 feet to 1 inch

Room marked.		Average height.	Cubic feet.
1	26' 6" x 19' 0" x 12' 6"	=	6293
2	26' 6" x 25' 0" x 12' 6"	=	8281
3	26' 6" x 17' 0" x 12' 6"	=	5631
4	36' 0" x 18' 0" x 11' 8"	=	7560
5	36' 0" x 58' 9" x 23' 10"	=	31044
6	26' 6" x 9' 9" x 23' 10"	=	6135
7	9' 0" x 9' 3"		

Room marked.		Average height.	Cubic feet.
8	27' 0" x 18' 10" x 14' 6"	=	7373
9	30' 6" x 15' 0" x 12' 9"	=	5833
10	27' 0" x 18' 10" x 14' 0"	=	7119
11	54' 3" x 21' 10" x 18' 0"	=	21317
12	36' 0" x 18' 6" x 11' 8"	=	7770
13	36' 0" x 19' 10" x 11' 8"	=	8330



Lighting. The total lighting area of each class-room is 93 sq. ft.

The lighting of these rooms is one-fifth of the floor space.

The lighting in room No. 10 is from the left and back, and in No. 8 (babies), from the right.

Recommendations.

- I. To re-construct the sanitary conveniences.
- II. To improve the playground.
- III. To provide sufficient inlet ventilation openings throughout the mixed school, and outlet ventilation in Room No. 4.
- IV. To improve the lighting in the large schoolroom, No. 5.
- V. To arrange that the number of scholars in Room No. 12 shall not exceed 66.

ST. THOMAS'S SCHOOLS.

The infants' school was erected in 1867, and the boys' and girls' schools in 1872.

The building is stone, and is one storey. There are three Boyle's and two revolving ventilators fixed on the roof.

Playgrounds.

There are three playgrounds; one for each department.

There is a small covered playground for boys, and one for girls under class-rooms Nos. 8 and 10.

There is no covered playground for the infants.

The playgrounds for boys and girls are approached by means of stone steps, and are about 5ft. below the level of the school.

The infants' playground is on the same level as the school.

The boys' and girls' playgrounds are separated by a wall; each is flagged, the boys' measures 224 sq. yds., and the girls' 211 sq. yds.

The infants' playground is flagged, and measures 450 sq. yds.

Sanitary Conveniences

The sanitary conveniences are of the pail type. There are four compartments but five pails, two pails being in one compartment (each compartment is well ventilated), and 19 linear feet of urinal for boys; and seven compartments for girls and infants, and 5 linear feet of urinals for infant boys.

They are situated 10ft. from the school, with a passage in front which is 4ft. in breadth, and the wall adjoining is 7ft. 0in. high.

Dry Refuse.

The dry refuse is stored in four covered ash-tubs in a passage behind the conveniences.

Walls

The internal surfaces of the school walls are plastered and coloured green, and are boarded to a height of 4ft. from the floor.

Floor.

The floor is boarded, swept daily, and washed at least once a year.

Heating.

The heating of the rooms is by means of hot water pipes, with radiators, and in the infant schoolroom there are 55ft. of grating over these pipes, which are under the floor.

Lighting

The artificial lighting is by incandescent light.

The partition between the class-rooms is of wood and glass, and the one between the main room in the infant school and the class-room No. 8, has a door in it, the bottom of which is about 15in. from the floor.

The glass in the windows is mostly semi-transparent, and the mullions are from 3in. to 4in. wide.

Ventilation.

The ventilation in some of the rooms is by means of window-sill ventilators and Boyle's outlets in the roof.

The outlet ventilators in the ceiling are regulated by means of a cord.

Cloak-Rooms.

There are three cloak-rooms—one for each department.

The Boys'

The boys' cloakroom, No. 9, is situated near the entrance to the playground, and measures 18ft. 6in. × 15ft.

It is lighted by two windows and ventilated by two window-sill inlets, 4in. in diameter, one Tobin's tube, one outlet in the ceiling, 4ft. × 1ft., and a small skylight in the roof, and two hinged windows.

There are 82 pegs arranged along the walls.

The Infants'

The infants' cloakroom is situated between class-rooms Nos. 8 and 10, and is separated from class-room 10 by a partition of glass and

wood, which does not reach to the ceiling, and therefore ventilates into class-room No. 10. The clothes are fixed on racks which are hoisted higher than this glass partition. This room is lighted by one window in the sill of which there is a ventilator, 4in. in diameter. There are no permanent outlets.

337 pegs are arranged on racks and walls.

The Girls'

The girls' cloakroom is situated near the entrance to the playground, and is 19ft. x 15ft.

This room is lighted by a skylight and two windows in the sills of which there are two inlet ventilators, 4in. in diameter. There is also one Tobin's tube, 11in. x 6in. There is an outlet in the ceiling, 4ft. x 1ft.; the skylight is made to open, and there are also two hinged windows.

About 300 pegs are arranged on racks and walls.

There is no lavatory accommodation.

There is no special cloak-room for the teachers.

BOYS' DEPARTMENT.

The boys department consists of one large room, and two classrooms.

Classroom No. 1.

The average number present during September, 1903, was 50.

The total floor space measures 390 sq. ft., or an average of 7.8 sq. ft. per scholar. The total cubic capacity is 7,995 cubic feet, or 159.9 cubic feet per head.

Lighting. The total lighting area measures 162 sq. ft., or more than one-half of the floor space.

The light is from the back, left, and front.

Ventilation The total permanent inlet ventilation area measures 25 sq. in., or an average of .5 sq. in. per scholar, and consists of two window-sill ventilators, 4in. in diameter, at a height of 4ft. from the floor.

There are two permanent outlet ventilators, 4ft. x 1ft., and one window hopper. There are six circular windows, four 1ft. 3in. in diameter, and two 1ft. 10in. in diameter, made to open. The total area of permanent outlet ventilation is 1,152 sq. in., thus allowing 23.2 sq. in. per head.

Main Room.

The average number present during September, 1903, was 90.

The total floor space measures 1,235 sq. ft., or over 13.7 sq. ft. per scholar. The total cubic capacity is 25,317 cubic feet, or 281.3 cubic feet per head.

Lighting. The total lighting area measures 162 sq. ft., or between one-eighth and one-ninth of the floor space.

The light is from the left.

Ventilation. The total permanent inlet ventilation area measures 75 sq. in., or an average of more than .8 sq. in. per scholar, and consists of six window-sill ventilators, 4in. in diameter, at a height of 4ft. from the floor.

There are three permanent outlet ventilators in ceiling, 4ft. x 1ft., or 1,728 sq in., thus allowing 19.2 sq. in. per head.

There are three window hoppers and six circular windows, 1ft. 10in. in diameter, made to open.

Classroom No. 3.

The average number present during September, 1903, was 40.

The total floor space measures 368 sq. ft., or an average of 9.2 sq. ft. per scholar. The total cubic capacity is 7,548 cubic feet, or 188.7 cubic feet per head.

The total lighting area measures 162 sq. ft., or one-half of the floor space.

The light is from the left, right, and front.

Ventilation. The total permanent inlet ventilation area measures 25 sq. in., or an average of .6 sq. in. per scholar. It consists of two window-sill ventilators, 4in. in diameter, at a height of 4ft. from the floor..

There is one permanent outlet ventilator, 4ft. x 1ft., and one hopper window, 1ft. 3in. x 8in., 7ft. from floor. The total area of permanent outlet ventilation is 576 sq. in., or 14.4 sq. in. per head.

There are six circular windows, 1ft. 10in. in diameter, which will open.

THE GIRLS' DEPARTMENT

Consists of one main room and two class-rooms.

The main room, No. 5, is the same as Room No. 2 in the boys' school.

Classroom No. 6.

The average number present during September, 1903, was 50.

The total floor space measures 390 sq. ft., or an average of 7.7 sq. ft. per scholar. The total cubic capacity is 7,995 cubic feet, or 158.6 cubic feet per head. There is a cooking stove in this room.

Lighting. The total lighting area measures 162 sq. ft., or less than one-half the floor space.

The light is from the left, back, and front.

Ventilation. The permanent inlet ventilation consists of two circular openings in window-sills, 4in. in diameter, or 25 sq. in., or an average of .5 sq. in. per scholar.

There are two permanent outlet ventilators in ceiling, 4ft. x 1ft., or 1,152 sq. in., thus allowing 23.0 sq. in. per head, and six circular window openings.

Classroom No. 4.

The average number present during September, 1903, was 50.4.

The total floor space measures 368 sq. ft., or an average of 7.3 sq. ft. per head. The total cubic capacity is 7,548 cubic feet, or 149.7 cubic feet per head.

Lighting. The total lighting area is 162 sq. ft., or less than one-half of the floor space.

Ventilation. The permanent inlet ventilation consists of two circular openings in window-sills, 4in. in diameter, or 25 sq. ins., thus allowing .5 sq. in. per head, and the permanent outlet ventilation consists of one outlet in ceiling 4ft. x 1ft., or 576 sq. in., thus allowing 11.5 sq. in. per head.

INFANTS' DEPARTMENT.

This department consists of one main room and two class-rooms.

Main Schoolroom No. 7.

The average number present during July, 1903, was 176.

The total floor space measures 1,845 sq. ft., or an average of 10.4 sq. ft. per scholar. The total cubic capacity is 43,363 cubic feet, or 246.3 cubic feet per head.

Lighting. The total lighting area measures 167 sq. ft., or one-eleventh of the floor space.

The light is chiefly from the left, and partly from above, through two skylights, which will open.

There is no permanent inlet or outlet ventilation.

There were formerly openings outside, connected with gratings on the floor, which have been closed.

There are four circular windows, 1ft. 3in. in diameter, made to open, six outlet ventilators in the ceiling, 4ft. x 1ft., or 3,456 sq. in., thus allowing 19.6 sq. in. per head, and two skylights which will open.

Classroom No. 8.

The average number present during July, 1903, was 98.5.

The total floor space is 607.6 sq. ft., or an average of 6.1 sq. ft. per scholar. Part of this room is in the form of a gallery. The total cubic capacity is 11,997 cubic feet, or 121.8 cubic feet per head.

Lighting. The total lighting area is 82 sq. ft., or less than one sixth of the floor space.

The light is from above for one class, and for another class left and right.

Ventilation. The permanent outlet ventilation consists of two outlets in ceiling, 4ft. x 1ft., or 1,152 sq. in., thus allowing 11.7 sq. in. per head.

The outlet ventilators are at present out of repair. There is one window, opening 18in. x 12in., into the boys' cloak-room, two skylights and two circular windows which will open.

There is no permanent inlet ventilation.

The door leading from this room into the playground is a sliding one, and it does not fit properly.

Classroom No. 10.

The average number present during July, 1903, was 36.

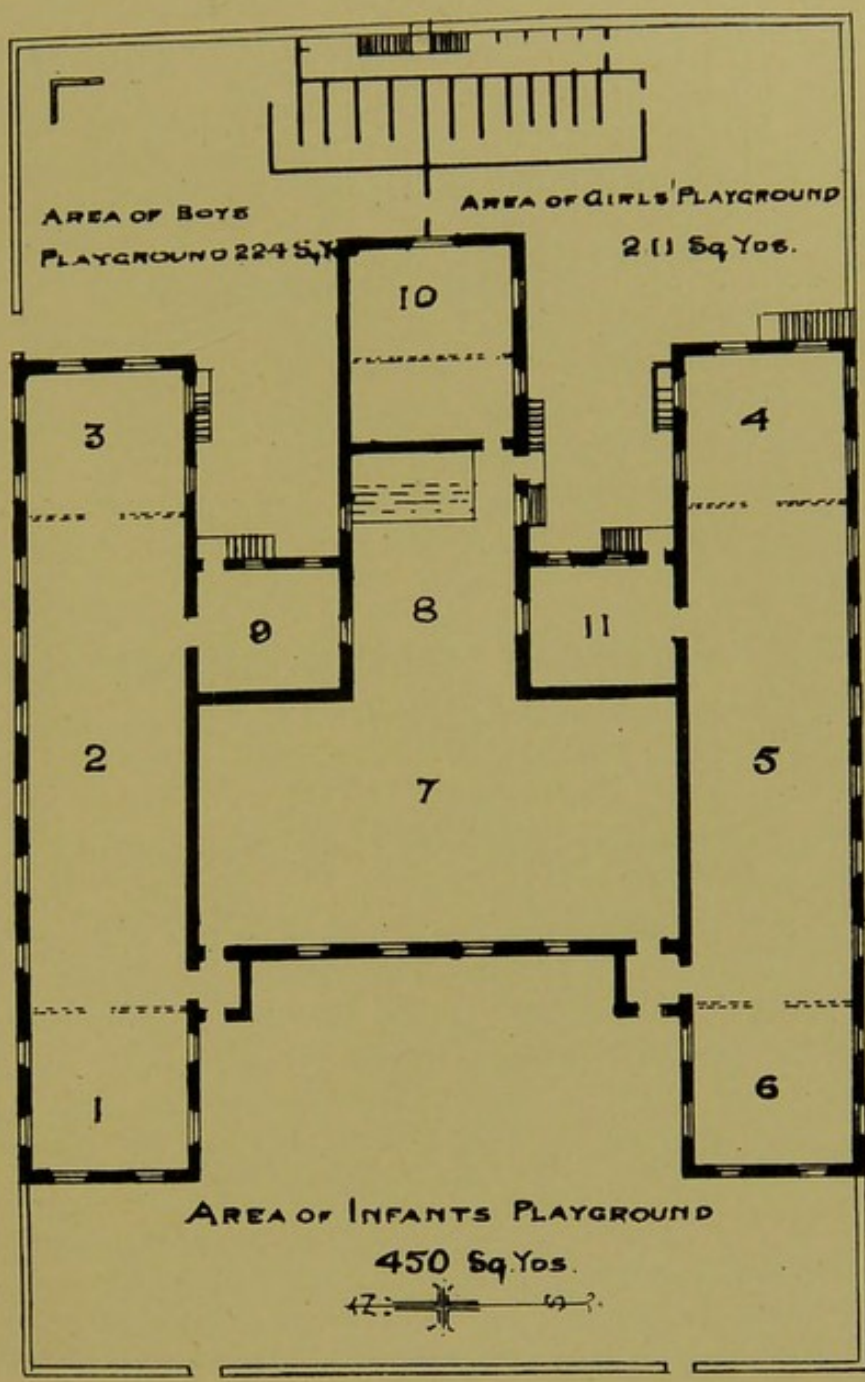
The total floor space measures 280 sq. ft., or an average of 7.7 sq. ft. per scholar. The total cubic capacity is 5,533 cubic feet, or 153.7 cubic feet per head.

Lighting. The total lighting area measures 70 sq. ft., or more than one-third of the floor space.

The light is from the left and front.

Ventilation. The total permanent inlet ventilation area measures 25 sq. in., or an average of .7 sq. in. per scholar, and consists of two window-sill ventilators, 4in. in diameter, 4ft. high from

ST. THOMAS' SCHOOL



AREA OF INFANTS PLAYGROUND

450 Sq. Yds.



LAMBETH ST.

Scale 30 feet to 1 inch

Room marked		Average height	Cubic feet.
1.....	20' 0" x 19' 6" x 20' 6"	=	7995
Do. 2.....	61' 9" x 20' 0" x 20' 6"	=	25317
Do. 3.....	20' 0" x 18' 5" x 20' 6"	=	7548
Do. 4.....	20' 0" x 18' 5" x 20' 6"	=	7548
Do. 5.....	61' 9" x 20' 0" x 20' 6"	=	25317
Do. 6.....	20' 0" x 19' 6" x 20' 6"	=	7995
Do. 7.....	60' 6" x 30' 6" x 23' 6"	=	43363
Do. 8.....	20' 3" x 30' 0" x 19' 9"	=	11997
Do. 9.....	18' 6" x 15' 0"		
Do. 10.....	20' 6" x 13' 8" x 19' 9"	=	5533



the floor. There are two hinged windows, 1ft. 3in. x 1ft. 6in., and one skylight which will open.

The only outlet ventilation is the fire-place, which is not used for heating purposes.

Recommendations.

- I. To convert the pail closets to fresh water w.c.'s.
- II. To provide plain glass in windows.
- III. To improve the ventilation openings where they are deficient.
- IV. To arrange that the scholars in Rooms, 1, 3, 4, 6, 8 and 10 shall not exceed the regulation numbers.
- V. To carry out all necessary repairs.

ACCRINGTON ROAD SCHOOL.

This school was erected in 1900, and is a one-storey building of stone.

Playgrounds.

There are two playgrounds, one for boys, and one for girls and infants.

The boys' playground measures 820 sq. yds., and is flagged. There is also a covered playground, measuring 144 sq. yds.

The playgrounds for the girls and infants measures 2,600 sq. yds., and is flagged. There is also a covered playground of 100 sq. yds. The covered playground faces the north.

There is also a plot of unpaved land adjoining the girls' playground.

Sanitary Conveniences.

The sanitary conveniences are of the glazed earthenware trough syphon type; there are six compartments with 15 linear feet urinal for boys, and one compartment is used by the male teachers. The urinal is provided with an automatic flushing pipe. The conveniences are in three groups, and are situated 6 yds. and 20 yds., respectively, from the school.

Each compartment is well lighted, and ventilated by an opening behind, 11in. x 2½in.

There is a pedestal wash-down w.c., with syphon cistern in small room adjoining the infants' mistresses' room. The compartment is lighted by one sash window, 3ft. x 1ft., and is ventilated by one window-sill ventilator, 6½in. x 3in.

Flushing is carried out daily by means of a 30-gallon automatic cistern.

The conveniences are well ventilated and lighted

There are seven compartments for girls and infants; four in one set and three in another, and 15 linear feet of urinal accommodation for the infant boys.

There is an open passage in front, 4ft. in breadth, and the wall facing the passage is 7ft. high.

Dry Refuse.

The dry refuse is stored in a brick ash-pit adjoining the boys' conveniences.

Lavatory Accommodation.

There are two lavatory basins in each of Nos. 10 and 11 cloak-rooms, four in Nos. 12 and 13, five in No. 14, for the use of the scholars. The waste pipes are not trapped, but discharge over gullies outside. There is also a lavatory with one lavatory basin, adjoining the infants' mistresses' room, and one adjoining the teachers' room of the mixed department. The waste pipes are trapped and discharge over gullies outside.

There are two brown and white glazed sinks, one adjoining the boys' cloak-room, and one between cloak-room No. 10 and the porch, the waste pipes of which are trapped and discharge over gullies outside.

The lavatories are each lighted by one sash window, and ventilated by one window-sill ventilator, 6½ in. × 3 in.

Walls.

The internal surfaces of the walls are boarded to a height of 4ft. from the floor, and the remainder plastered and coloured pale green. The ceiling is whitewashed.

The height from the floor to the wall plate is 12ft., and from the floor to the centre of the ceiling it is 16ft.

The floor is boarded, and is set on concrete.

Lighting.

The glass in the windows is plain, except the lower panes, which are semi-transparent. The upper portion of the windows is composed of small panes, 7 in. × 5 in.

The artificial light is electric light.

Heating.

The heating is carried out by hot water pipes, coils of which have been placed in connection with all the inlet ventilators.

The ventilation is by means of Tobin's tube inlets, and two turrets, one on the mixed department, and one on the infants', in which there are fixed electrical fans for extraction. There are eleven fans, having a collective capacity for extracting 21,950 cubic feet of air per minute.

It is said that the air of the school can be extracted in about four minutes.

Cloak-Rooms.

There are five cloak-rooms: three for infants, Nos. 10, 11 and 12; one for girls, No. 13; and one for boys, No. 14.

Nos. 10, 11 and 12 Cloak-Rooms.

Each is lighted by three sash windows.

No. 10 is ventilated by two inlet ventilators in window-sills, $6\frac{1}{2}$ in. \times 3 in., and an electric fan, 14 in. in diameter; and Nos. 11 and 12 rooms are ventilated by one inlet ventilator in wall, $6\frac{1}{2}$ in. \times 3 in., and in electric fan in ceiling, 14 in. in diameter.

Nos. 13 and 14 are lighted by two sash windows, and ventilated by one window-sill ventilator, $6\frac{1}{2}$ in. \times 3 in., in each room, and an electric fan 14 in. diameter.

The floors of these cloak-rooms are tiled, the walls are constructed of white glazed bricks to a height of 3 ft. from floor, and above this height they are rendered with plaster and painted pale green.

They are heated by hot-water pipes.

The pegs are placed on racks in centre of floors, and against the walls, and numbered.

There are 90 hooks in No. 10 room.

„	110	„	„	11	„
„	110	„	„	12	„
„	170	„	„	13	„
„	110	„	„	14	„

MIXED DEPARTMENT.

The mixed department consists of one large room, divided into three class-rooms by partitions, formed of wood and glass, and two class-rooms. There is a private room for the use of the headmaster, and another one for the teachers. These rooms are provided with a wash-down pedestal water-closet and a lavatory basin.

Room No. 1.

The average number present during September, 1903, was 57.3.

The total floor space measures 645 sq. ft., or an average of 11 sq. ft. per scholar. The total cubic capacity is 9,352 cubic feet, or 164.0 cubic feet per head.

This room is separated from room No. 2 by glazed slides.

Lighting. The total lighting area measures 97 sq. ft., or about one-eighth of the floor space.

The light is from the left and back, and indirectly from the right through the glazed slides.

Ventilation The total permanent inlet ventilation measures 468 sq. in., or an average of 8.1 sq. in. per scholar, and consists of two large Tobin's tubes having an area of 360 sq. in. (20in. x 9in.), and one 108 sq. in. (9in. x 12in.).

The total permanent outlet ventilation measures 720 sq. in., or an average of 12.5 sq. in. per scholar, and consists of an outlet in the roof, 2ft. 6in. x 2ft. 0in., connected to an electrical fan. There are six sash windows, and six opening on hinges.

There is cross ventilation.

Room No. 2.

The average number present during September, 1903, was 58.

The total floor space measures 645 sq. ft., or an average of 11.1 sq. ft. per scholar. The cubic capacity is 9,352 cubic feet, or 161.2 cubic feet per head.

Lighting The total lighting area measures 102 sq. ft., or about one-sixth of the floor space.

The light is from behind, and indirectly from right and left through the glass slides.

Ventilation. The total permanent inlet ventilation measures 396 sq. in., or an average of 6.8 sq. in. per scholar, and consists of three Tobin's tubes, two 9in. x 12in., and one 20in. x 9in.

The total permanent outlet ventilation measures 720 sq. in., or an average of 12.4 sq. in. per scholar, and consists of two outlets in the ceiling, 2ft. x 1ft. 3in. There are six sash windows and six opening on hinges.

There is cross ventilation.

Room No. 3.

The average number present during September, 1903, was 54.5.

The total floor space measures 649 sq. ft., or an average of 11.8 sq. ft. per scholar. The cubic capacity is 9,352 cubic ft., or 173.1 cubic feet per head. This room is separated from room No. 2 by glazed slides.

Lighting. The total lighting area measures 97 sq. ft., or about one-eighth of the floor space.

The light is from right, behind, and indirectly from the left, through the glass slides.

Ventilation. The total permanent inlet ventilation measures 468 sq. in., or an average of 8.6 sq. in. per scholar, and is the same as No. 1.

The total permanent outlet ventilation measures 720 sq. in., or an average of 13.2 sq. in. per scholar, and consists of one outlet in ceiling 2ft. 6in. x 2ft. There are six sash windows, and six opening on swivels, and there is cross ventilation.

Room No. 4.

The average number present during September, 1903, was 44.

The total floor space measures 542 sq. ft., or an average of 12 sq. ft. per scholar. The total cubic capacity is 7,868 cubic feet, or 178.8 cubic feet per head.

Lighting. The total lighting area measures 67 sq. ft., or about one-eighth of the floor space, and the light is received from the left.

Ventilation. The total permanent inlet ventilation measures 360 sq. in., or an average of 8.1 sq. in. per scholar, and consists of two Tobin's tubes (20in. x 9in.), at a height of 5ft. 6in. from the floor.

The total permanent outlet ventilation measures 452 sq. in., or an average of 10.2 sq. in. per scholar, and consists of an electric fan 2ft. in diameter. There are four sash windows, and two hinge windows. There is cross ventilation.

Room No. 5.

The average number present during September, 1903, was 46.

The total floor space measures 542 sq. ft., or an average of nearly 12sq. ft. per scholar. The total cubic capacity is 7,868 cubic feet, or 171.0 cubic feet per head.

Lighting. The total lighting area measures 67 sq. ft., or about one-eighth of the floor space.

The light is from the left.

Ventilation. The total permanent inlet ventilation measures 360 sq. in., or an average of 7.8 sq. in. per scholar, and is the same as Room No. 4.

The total permanent outlet ventilation measures 452 sq. in., or an average of 9.8 sq. in. per scholar, and consists of an electric fan 2ft. in diameter. There are four sash windows, and two hinge windows.

There is cross ventilation.

INFANTS' DEPARTMENT.

This department consists of one large room, divided into two by a wooden and glass partition, and two class-rooms.

Room No. 6.

The average number present during June, 1903, was 30.

The total floor space measures 312 sq. ft., or an average of 10 sq. ft. per scholar. The total cubic capacity is 4,524, or 150.8 cubic feet per head. This room is separated from room No. 7 by glazed slides.

Lighting. The total lighting area measures 97 sq. ft., or about one-third of the floor space.

The light is from the left, and behind.

Ventilation. The total permanent inlet ventilation measures 468 sq. in., or an average of 15.6 sq. in. per scholar, and consists of three Tobin's tubes, two 20in. x 9in., and one small one, 12in. x 9in., at a height of 5ft. 6in. from the floor.

The total permanent outlet ventilation measures 576 sq. in., or an average of 19.2 sq. in. per scholar, and consists of one outlet in ceiling, 2ft. x 2ft. There are six sash windows, and three hinge windows.

There is cross ventilation.

Room No. 7.

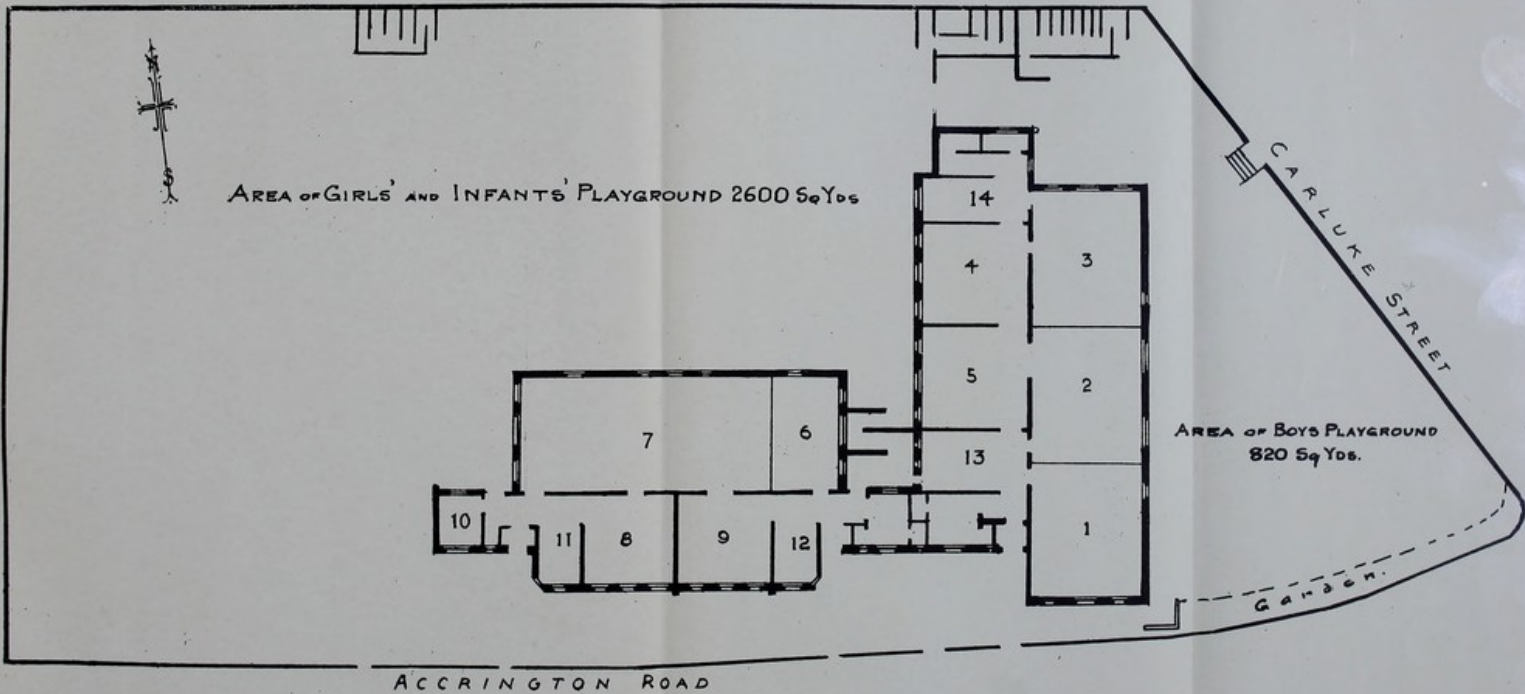
The average number present during June, 1903, was 84.

The total floor space measures 1,368 sq. ft., or an average of 16.2 sq. ft. per scholar. The total cubic capacity is 19,836 cubic feet, or 236.1 cubic feet per head.

There are two windows in the partition wall between this room and rooms Nos. 8 and 9.

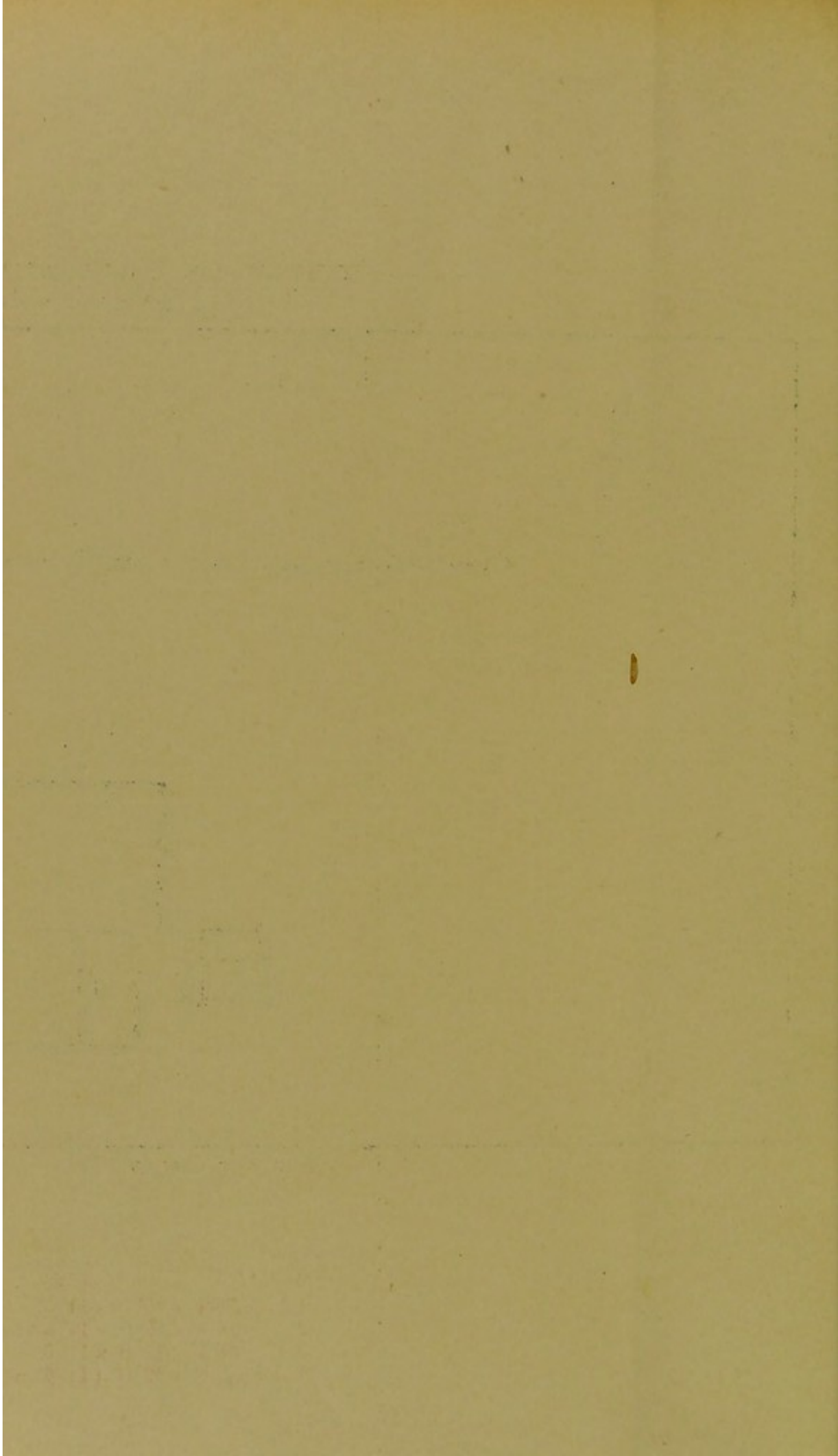
— ACCRINGTON ROAD SCHOOL —

Scale 30 feet to 1 inch.



Room marked	Average height.	Cubic feet.
1.....	29' 4" x 22' 0" x 14' 6"	= 9352
2.....	29' 4" x 22' 0" x 14' 6"	= 9352
3.....	29' 4" x 22' 0" x 14' 6"	= 9352
4.....	24' 8" x 22' 0" x 14' 6"	= 7868

Room marked	Average height.	Cubic feet.
5.....	24' 8" x 22' 0" x 14' 6"	= 7868
6.....	24' 0" x 13' 0" x 14' 6"	= 4524
7.....	57' 0" x 24' 0" x 14' 6"	= 19836
8.....	20' 0" x 20' 0" x 14' 6"	= 5800
9.....	20' 0" x 20' 0" x 14' 6"	= 5800



Lighting. The total lighting area measures 166 sq. ft., or about one-eighth of the floor space.

The light is from behind and the right, and indirectly from the left through the glass slides.

Ventilation. The total permanent inlet ventilation measures 1,008 sq. in., or an average of 12.0 sq. in. per scholar, and consists of six Tobin's tubes, five 20in. \times 9in., and one small one, 12in \times 9in.

The total permanent outlet ventilation measures 1,728 sq. in., or an average of 20.5 sq. in. per scholar, and consists of three outlets in the roof, 2ft. \times 2ft. There are ten sash windows, and six opening on hinges.

Room No. 8.

The average number present during June, 1903, was 31.5.

The total floor area measures 400 sq. ft., or an average of 12.7 sq. ft. per scholar. The total cubic capacity is 5,800 cubic feet, or 184.1 cubic feet per head.

Lighting. The total lighting area measures 62 sq. ft., or about one-sixth of the floor space.

The light is from the left.

Ventilation The total permanent inlet ventilation measures 360 sq. in., or an average of 11.1 sq. in. per scholar, and consists of two Tobin's tubes, 20in. \times 9in., at 5ft. 6in. from the floor

The total permanent outlet ventilation measures 452 sq. in., or an average of 14.3 sq. in. per scholar.

There is cross ventilation.

Room No. 9.

The average number present during June, 1903, was 52.5.

The total floor space measures 400 sq. ft., or an average of 7.6 sq. ft. per scholar. The total cubic capacity is 5,800 cubic feet, or 110.4 cubic feet per head. This is a gallery room.

Lighting. The total lighting area measures 62 sq. ft., or about one-sixth of the floor space.

The light is from the right.

Ventilation. The total permanent inlet ventilation measures 360 sq. in., or an average of 6.8 sq. in. per scholar, and consists of two Tobin's tubes, 20in. \times 9in., at a height of 5ft. 6in. from the floor.

The total permanent outlet ventilation measures 452 sq. in., or an average of 8.6 sq. in. per scholar. There are four sash windows, and two opening on hinges.

There is cross ventilation.

Recommendations.

- I. To make good the defective joints of the iron pipes which ventilate the drains near the sanitary conveniences.
- II. To arrange that class-room No. 9 shall not contain more than 44 scholars.

PRINCES STREET SCHOOL.

This school, which is built of brick, is a two-storey building, and situated in Princes Street, in a congested district. It was opened as a day school in 1878.

Playground.

There is one playground for the three departments—boys, girls, and infants. It measures 200 sq. yds., and is behind the school.

The surface of the playground is ragged, and slopes towards a gully.

A boundary wall separates this playground from the backyards of two houses in Montague Street. The height of this wall, from the playground is 1ft. 8in., and the height from the yard is 6ft. The wall is very dangerous to infants, owing to its small height. This would be obviated by placing railings on the said wall.

This playground is small.

No portion is under cover.

Sanitary Conveniences

The sanitary conveniences for boys consists of two iron McFarlane's, with plug. Each compartment measures 2ft. 9in. to seat-board, and 3ft. 2in. wide, is well lighted and ventilated. There is a passage in front of these compartments, 2ft. 9in. wide, not open to external air above. These conveniences are flushed by hand twice a day.

The girls' sanitary conveniences consist of three short hoppers with a cistern each, flushed twice a day. Each compartment is well lighted and ventilated. There is also one short hopper for the teachers.

The infants use any of the sanitary conveniences.

There are about 4 linear feet of urinal accommodation at this school, in the chapel yard, which are under cover, have cemented backs and stone sides. The floor is flagged, but out of repair.

Drainage

The drainage is apparently satisfactory. Some of the downspouts are directly connected to the drains, and the lavatory waste pipes are not trapped.

Refuse

There are two ash-tubs, under a wooden cover, adjoining the boys' sanitary conveniences. The wooden cover is broken.

Cloak-Rooms

There are two cloak-rooms. One for the mixed, and the other for the infants' department.

The mixed cloak-room is situated on the right of the back entrance and is marked No. 2, on the plan. It measures 14ft. 3in. \times 10ft. 7in, and is lighted by one window, 7ft. 0in. \times 3ft. 4in. + 1ft. 8in. semi-circular window; one Sherringham window, 2ft. 4in. \times 1ft., and one hinge window and one circular opening in ceiling, 1ft. 6in. in diameter.

There are 144 hooks placed on one rack and against the walls.

The cloak-room is warmed by hot water pipes.

The infants' cloakroom is situated at the top of the staircase, and marked No. 1 on the 1st floor plan, measures 12ft. 9in. \times 7ft. 6in. It is lighted by a sash window, 6ft. 0in. \times 3ft. 0in.

There are 66 hooks placed against the walls.

The cloak-room is warmed by hot water pipes.

Lavatory Accommodation.

There are two white glazed lavatory basins, and one brown and white sink in a room under the infants' cloak-room, and marked No. 1 on the ground plan. The room is lighted by sash window, 7ft 0in. \times 3ft. 0in. The waste pipes are not trapped, and discharge over a gully in the yard.

There are three enamelled drinking-cups.

Heating.

The heating of the school is carried out by means of hot water pipes placed round the rooms.

Staircase.

The staircase is well lighted, the steps are of stone, not easily ascended (riser 7in., tread 10in.). There are three flights, and a handrail, with studs to prevent scholars from sliding down.

The infants occupy the 1st floor, and consequently have to use this staircase, which is dangerous.

Walls

The walls are plastered. The large room on ground floor and the large room on the 1st floor are boarded 4ft. high; above this height they are painted a pale green colour.

The other rooms are boarded 4ft. from the ground, and above this height painted light brown.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept every night, and washed twice a year. I understand that instructions have now been given to wash them four times a year.

GROUND FLOOR.

There are practically only two rooms on the ground floor. The class-rooms marked 3, 4 and 5 can be divided by shutters, but these are not drawn. The shutters reach to a height of about 7ft. from the ground.

Room No. 6

Is the large room, measuring 42ft. 8in. \times 39ft. 3in., or 1,675 sq. ft., and the average number of scholars present during September, 1903, was 178, thus allowing 9.4 sq. ft. of floor space per head. The cubic capacity is 26,376 cubic feet, or 148.1 cubic feet per head.

Ventilation. The ventilation consists of four Sherringham windows, 2ft. 4in. \times 1ft. 6ft. 6in. from floor; four windows opening on hinges, 2ft. 4in. \times 1ft. 8in. at the upper parts; one window, 3ft. 6in. \times 1ft. 6in. over the door; three Tobin's tubes, 12in. \times 4in., 6ft. 6in. from the floor; and 16 circular outlets in the ceiling, 1ft. 6in. in diameter.

The permanent inlet ventilation consists of three Tobin's tubes, 12in. \times 4in., or 144 sq. in., thus allowing .8 sq. in. per head.

The permanent outlet ventilation consists of 16 circular outlets in ceiling 1ft. 6in. in diameter, or 4,064 sq. in., thus allowing 22.8 sq. in. per head.

Lighting. The total lighting area is 118 sq. ft., which is equal to one-fourteenth of the floor space; 53 sq. ft. are of frosted glass.

The light is from the left and right.

There are 12 incandescent lights.

Rooms Nos. 3, 4 and 5

Can be divided into three by shutters, but when these are drawn they are only 7ft. high. The shutters are seldom drawn, and it is practically one large room, although the light from one room to another is obstructed by these shutters.

The rooms, Nos. 3, 4 and 5 on plan measure 491 sq. ft., and the maximum number of scholars present in these rooms is 47 (the average cannot be obtained, as the classes change very frequently), thus allowing 10.4 sq. ft. of floor space per head. The cubic capacity is 7,750 cubic feet, or 164.9 cubic feet per head. This room is divided from No. 6 room by a wooden and glass partition.

Ventilation. The ventilation consists of four Sherringham windows, 2ft. 2in. \times 9in., 6ft. 6in. from floor; three windows opening on hinges, 2ft. 4in. \times 1ft. 8in., 7ft. from the floor, and three outlets in the ceiling, 1ft. 6in. in diameter.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of three circular outlets in the ceiling, 1ft. 6in. in diameter, or 762 sq. in., thus allowing 16.2 sq. in. per head.

Lighting. The total lighting area is 108 sq. ft., or nearly one-fourth of the floor space.

The light is from the left.

There are three naked lights for artificial lighting.

FIRST FLOOR.

Is occupied by the infants.

Room No. 6

Measures 43ft. 0in. \times 42ft. 8in., or 1,834 sq. ft., and the average number of scholars present during June, 1903, was 63, thus allowing 29.1 sq. ft. of floor space per head.

There is a large platform in this room.

The cubic capacity is 28,895 cubic feet or 458.6 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, 2ft. \times 7in., 6ft. 6in. from floor; six windows opening on hinges at their upper parts, 2ft. \times 1ft. 6in.; 11 circular outlets in ceiling 1ft. 6in. in diameter, and three Tobin's tubes, 12in. \times 4in.

The permanent inlet ventilation consists of three Tobin's tubes, or 144 sq. in., thus allowing 2.3 sq. in. per head.

The permanent outlet ventilation consists of 11 circular outlets in the ceiling, 1ft. 6in. in diameter, or 2,794 sq. in., thus allowing 44.3 sq. in. per head.

Lighting. The total lighting area is 144 sq. ft., or about one-twelfth of the floor space.

The light is from the left and right.

There are 10 incandescent lights.

Of the 144 sq. ft. of glass, 104 sq. ft. are frosted glass.

Rooms Nos. 3, 4 and 5.

These rooms can be divided by shutters as in the mixed school class-rooms, and as the shutters are seldom drawn these rooms have been considered as one room.

It measures 36ft. x 10ft. 7in., or 381 sq. ft., and the average number of infants present during June, 1903, was 31, thus allowing 12.3 sq. ft. of floor space per head. The total cubic capacity is 6,000 cubic feet, or 193.5 cubic feet per head.

Ventilation. The ventilation consists of three windows opening on hinges, 2ft. x 1ft. 6in., at the upper parts; one Sherringham window, 2ft. x 7in., 6ft. from floor, and three circular outlets in the ceiling, 1ft. 6in. in diameter.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of three circular openings in the ceiling, 1ft. 6in. in diameter, or 762 sq. in., thus allowing 24.6 sq. in. per head.

Lighting. The total lighting area of this room is 94 sq. ft., or one-fourth of the floor space.

Of the 94 sq. ft. of glass, about 82 sq. ft. are frosted.

There are three naked gas jets for artificial lighting.

Light is received from the left.

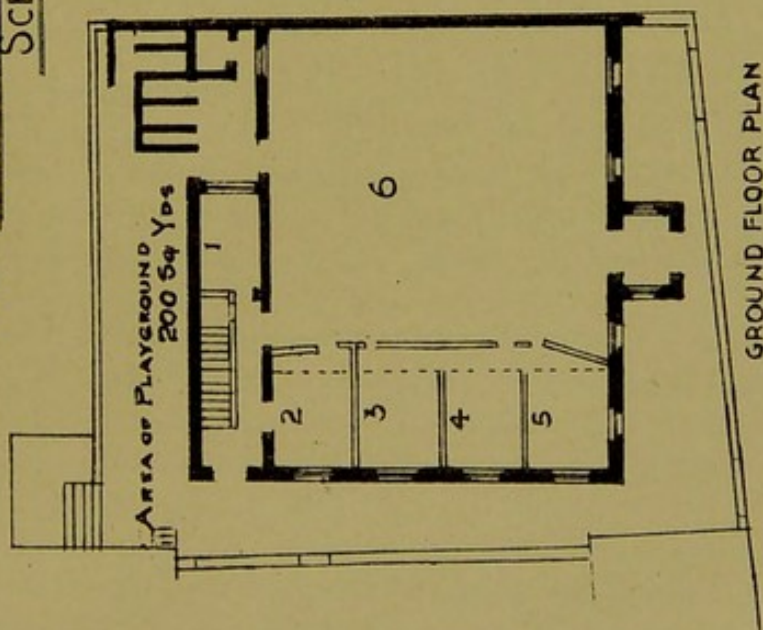
Recommendations.

- I. To reconstruct the boys' sanitary conveniences.
- II. To provide ventilation openings where necessary.
- III. To arrange that the infants shall be taught on the ground floor, so that they shall not need to use a staircase.
- IV. To replace the class-room shutters by partitions of wood and glass.
- V. To provide plain glass in windows.

PRINCES STREET PRIMITIVE METHODIST

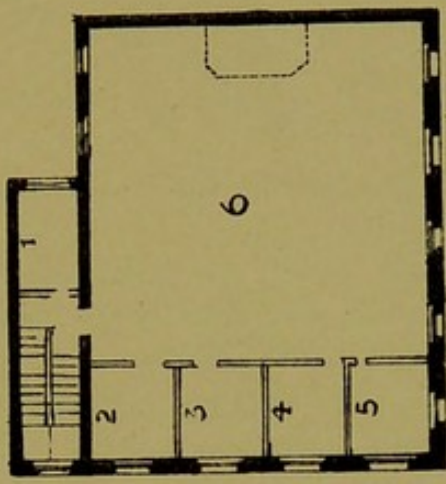
SCHOOL

Scale 30 feet to 1 inch



GROUND FLOOR PLAN

Room marked	Average height.	Cubic feet.
1...	12' 9" x 7' 6"	
2...	14' 3" x 10' 7" x 15' 9" =	2370
3...	15' 9" x 10' 7" x 15' 9" }	7750
4...	15' 9" x 10' 7" x 15' 9" }	
5...	15' 0" x 10' 7" x 15' 9"	
6...	42' 8" x 39' 3" x 15' 9" =	26376



FIRST FLOOR PLAN.

Room marked	Average height.	Cubic feet.
1...	12' 9" x 7' 6"	
2...	12' 0" x 10' 7" x 15' 9" =	2000
3...	12' 0" x 10' 7" x 15' 9" }	6000
4...	12' 0" x 10' 7" x 15' 9" }	
5...	12' 0" x 10' 7" x 15' 9"	
6...	43' 0" x 42' 8" x 15' 9" =	28895



ST. ANNE'S SCHOOL,

PRINCES STREET.

The school is of stone, was built in 1887 to 1889, and is in excellent condition. It is situated in Princes Street, and Paradise Street, and is a two-storey building. It consists of the boys', girls' and infants' departments.

The boys occupy three rooms on the ground floor, and two on the 1st floor; the girls occupy five rooms on the 1st floor; and the infants occupy four rooms on the ground floor.

Playgrounds.

There are two playgrounds— one for boys, and one for girls and infants.

The boys' playground measures 518 sq. yds., and there is a covered playground about 10yds. \times 4yds. The yard surface is paved at the entrance to the yard, the remainder is flagged, and in good condition sloping towards a gully in the centre.

The girls' and infants' playground, which measures 488 sq. yds., is separated from the boys', by a rubble wall. There is also a covered playground for the girls and infants, 10yds. \times 4yds. The surface of this playground is also well flagged, and slopes towards a gully in the centre.

Sanitary Conveniences.

The sanitary conveniences are about 13 yards from the nearest door or window. There are four series. There are four compartments for the boys, and one for the teachers. There are seven compartments for the girls, and one for the teachers, and there are five for the infant girls, and two for the infant boys.

The compartments for the boys, girls, and infant girls, measure 3ft. to seat-board, and 2ft. 3in. wide. There is a passage in front of each series of compartments 3ft. wide, and a face wall 7ft. high. The passages are well flagged, but there is no gully to take away surface water.

The compartments for infant boys are smaller than the other compartments, in consequence of their separation from the girls'. These two compartments measure 12in. from wall to seat-board, and 2ft. wide. There is a passage in front 2ft. 9in. wide, and a face wall 7ft. high. The passage is well flagged, but no gully has been provided to take away surface water.

The compartments are ventilated by the doors having been left short 6in. at top and 4in at bottom, and the opening over the doors also lights the compartments.

Each compartment is lined with brown glazed polished bricks.

The type of conveniences is Whittaker's trough system, with a 30-gallon cistern (automatic) to each set, and they are flushed twice a week.

The floors and seat-boards are washed twice a week.

There is a cavity at the end of the boys' conveniences, and one at the end of the girls', into which the traps of the conveniences are placed, and refuse has been placed into the cavity at end of girls' conveniences. It is advisable that covers should be provided over these cavities to prevent this.

There are $14\frac{1}{2}$ linear feet of urinals at the end of the boys' conveniences. The sides, and backs, are constructed of stone slabs, excepting one division, the back of which is composed of rubble walling. The floor is flagged and a channel has been formed leading to a properly trapped gully.

There are 6 linear feet of urinals for the infant boys, at end of girls' conveniences, with stone backs and sides; the floor is flagged, and a channel has been formed leading to a properly trapped gully.

The above urinals are flushed by hand.

There are also three pedestal w.c.'s inside the school, and one in the porch in the boys' yard.

Drainage.

The drainage appears to be in good order. The downspouts are partly disconnected, and one lavatory waste pipe is trapped.

Refuse.

There is a covered place provided near the infants' conveniences, but it is not used. There are four ash-tubs placed under the boys' covered playground.

Lavatory Accommodation.

There are three brown lavatory basins in the girls' cloakroom, the waste pipes of which discharge into a common pipe, and then over down-spout hopper head to a gully. There is a white glazed lavatory basin in a small room adjoining mistresses' room (No. 10, 1st floor). The waste pipe is trapped, and discharges over a hopper head, and thence over a gully.

There are three brown lavatory basins in the infants' cloak-room, the waste pipes of which are not trapped, and discharge over a gully.

There is a white glazed lavatory basin in a small place adjoining the mistresses' room (No. 7, ground floor), the waste pipe of which is trapped, and discharges over a gully.

There is one brown lavatory basin in the boys' cloak-room No. 1, and one in cloak-room on first floor, the waste pipe of which discharges into one common pipe, and then over a gully.

Cloak-Rooms.

There are four cloak-rooms. The boys' cloak-room, No. 1 (ground plan), measures 20ft. \times 12ft., or 240 sq. ft., and is lighted by two windows, one 6ft. 6in. \times 5ft. 6in., and one 6ft. 6in. \times 3ft. 4in., of which 2ft. 10in. \times 2ft. 9in. + 3ft. 10in. \times 5ft. 6in., will open for ventilation at their upper parts.

The room is warmed by hot water pipes.

The walls to a height of 5ft. 0in. are constructed of polished glazed bricks, and above this height they are rendered with plaster. The floor is constructed of tiles.

There are 208 hooks on iron racks in the centre of the floor, and two racks, placed 6in. from the walls.

This cloak-room is entirely cut off from the school-rooms by a passage 5ft. wide, with a door at each end.

There is another cloak-room upstairs, No. 2, at the top of the landing, used by the boys in the two class-rooms on 1st floor, measuring 12ft. 8in. \times 8ft. This cloak-room is lighted by one windows, 3ft. 9in. \times 4ft. 6in., of which two panes, 2ft. 2in. \times 1ft. 9in. will open at the top for ventilation.

The room is warmed by hot water pipes.

There are 95 hooks on iron racks.

The floor is constructed of boards, and the walls of glazed polished bricks up to 4ft. 6in.; above this height they are rendered with plaster and painted.

The girls' cloak-room (No. 9 on 1st floor), is situated at the top of the south staircase landing, and measures 24ft. 3in. \times 16ft. 0in., or 436 sq. feet. It is lighted by two windows, 4ft. 5in. \times 5ft. 3in., of which four panes, 2ft. \times 2ft. 7in., open at the top for ventilation.

There are 365 hooks on iron racks.

The floors and walls are constructed similarly to those in the boys' cloak-room.

The cloak-room is entirely cut off from any class-room.

The infants' cloak-room (marked No. 6 on ground plan), is situated

at the entrance from the girls' playground, measures 24ft. 3in. \times 16ft. 0in., or 388 sq. ft., and is directly under the girls' cloak-room. The room is lighted by two windows, 9ft. \times 5ft. 3in., of which four open at the top for ventilation, 2ft. \times 2ft. 7in.

There are 184 hooks on iron racks.

This cloak-room is entirely cut off from any class-room by a passage, with a door at each end.

The construction of the walls, floors, etc., is similar to those in the boys' cloak-room.

Heating.

Is carried out by means of hot water pipes placed round the rooms, and in rooms Nos. 8 and 9 on the ground plan, there are open fire-grates.

Floors.

The floors of the schoolroom are constructed of rectangular blocks, set in concrete; some of which are loose. They are swept every night and washed three times a year.

Walls.

The walls are cemented to a height of 4ft. 6in. from the floor, and above this height rendered with plaster. They are painted a chocolate colour 4ft. 6in. from floor, and the remainder a pale green colour.

Staircases.

There are two staircases, one on the north-west side of the school, with three landings and 30 steps, and the other on the south-east, with four landings and 30 steps. Both staircases are well-lighted, the steps are of stone, and iron balusters. They are easy to ascend.

The former is a dog-legged staircase; the latter is a well staircase.

BOYS' DEPARTMENT.

There are three rooms on the ground floor, and two rooms on 1st floor used for the boys.

GROUND FLOOR.—Room No. 2

Is the large room, measuring 46ft. 9in. \times 21ft. 6in., or 1,005 sq. ft., and the average number of boys present during September, 1903, was 100, thus allowing 10 sq. ft. of floor space per head. The cubic capacity is 14,406 cubic feet, or 144.0 cubic feet per head.

Ventilation. The ventilation consists of eight windows opening on hinges, at the top, 2ft. 9in. \times 2ft. 7in.; four hopper windows, 1ft. 8in. \times 9in., 6ft. from floor; three Tobin's tubes, 9in. \times 3in., 6ft. 3in. from floor, and two perforated gratings in outer walls, 12in. \times 8in., 1ft. from the ceiling.

The permanent inlet ventilation consists of three Tobin's tubes.

The total area of permanent inlet ventilation is 81 sq. in., thus allowing .8 sq. in. per head.

The permanent outlet ventilation consists of two perforated gratings, 12in. \times 8in., or 192 sq. in., thus allowing 1.9 sq. in. per head.

There is no cross ventilation.

Lighting The total lighting area of this room is 168 sq. ft., or one-sixth of the floor space.

The light is from the right and behind.

The two lower rows of panes in two windows in Princes Street are painted yellow.

The lower panes of glass in the windows throughout the school is semi-transparent, the remainder are of transparent glass.

There are 12 gas lights.

Room No. 3

Is a class-room, and glass partitions divide the large room No. 2, and class-room No. 4.

This room measures 27ft. 6in. \times 24ft. 0in., or 660 sq. ft., and the average number of boys present during September, 1903, was 49, thus allowing 13.5 sq. ft. of floor space per head. The total cubic capacity is 9,466 cubic feet, or 193.1 cubic feet per head.

Ventilation. The ventilation of this room consists of two hopper window openings, 6ft. from floor, 1ft. 8in. \times 9in.; and four windows opening on hinges at the top: two 2ft. 9in. \times 2ft. 7in., and two 2ft. 9in. \times 2ft.; one Tobin's tube, 7ft. from the floor (9in. \times 3in.), and one grating in the ceiling (1ft. 2in. \times 10in.).

The permanent inlet ventilation consists of one Tobin's tube, 9in. \times 3in. The total area of permanent inlet ventilation is 27 sq. in., thus allowing .5 sq. in. per head.

The permanent outlet ventilation consists of one grating in the ceiling, 1ft. 2in. \times 10in., or 140 sq. in., thus allowing 2.8 sq. in. per head.

There is no cross ventilation, except when the slides are drawn which divide this room from No. 4.

Lighting.

The total lighting area is 74 sq. ft., or about one-ninth of the floor space.

The light is from the left.

Light is also indirectly received through the glass slides.

There are six naked gas jets.

Classroom No. 4

Measures 27ft. 6in. \times 22ft. 6in., or 619 sq. ft., and the average number of boys present during September, 1903, was 75, thus allowing 8.2 sq. ft. of floor space per head. The total cubic capacity is 8,868 cubic feet, or 118.2 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows 1ft. 8in. \times 9in., 6ft. from the floor; and four windows opening 2ft. 9in. \times 2ft. 7in. at the top; two Tobin's tubes, 9in. \times 3in., 7ft. from the floor, and one grating in the ceiling, 1ft. 2in. \times 10in., or 140 sq. in.

The permanent inlet ventilation consists of two Tobin's tubes, 9in. \times 3in.

The total area of permanent inlet ventilation is 54 sq. in., thus allowing .7 sq. ins. per head.

The permanent outlet ventilation consists of one grating in the ceiling, 1ft. 2in. \times 10in., or 140 sq. in., thus allowing 1.8 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 94 sq. ft., or one-sixth of the floor space.

The light is from the left.

There are six gas jets.

FIRST FLOOR.—Room No. 3

Measures 24ft. 0in. \times 23ft. 3in., or 558 sq. ft., and the average number of boys present during September, 1903, was 43, thus allowing 12.9 sq. ft. of floor space per head. The total cubic capacity is 7,997 cubic feet, or 185.9 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 1ft. 8in. \times 9in., 6ft. from the floor; four windows opening on hinges, 2ft. 7in. \times 2ft. 9in. at the top; one Tobin's tube, 9in. \times 3in., 7ft. from the floor, one grating in the ceiling (1ft. 2in. \times 10in.), and one grating in wall, 12in. \times 8in.

The permanent inlet ventilation consists of one Tobin's tube, 9in. x 3in., or 27 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of one grating in the ceiling, 1ft. 2in. x 10in., and one grating in wall, 12in. x 8in., or 236 sq. in., thus allowing 5.5 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area of this room is 73 sq. ft., or one-seventh of the floor space.

The light is from the left.

There are six gas jets.

Room No. 4

Measures 23ft. 3in. x 22ft. 6in., or 523 sq. ft., and the average number of boys present during September, 1903, was 39, thus allowing 13.4 sq. ft. of floor space per head. The total cubic capacity is 7,977 cubic feet, or 204.5 cubic feet per head.

Ventilation. The ventilation consists of three hopper windows, 1ft. 8in. x 9in., 6ft. from the floor; two Tobin's tubes, 9in. x 3in., 7ft. from the floor, one grating in the ceiling, 1ft. 2in. x 10in., and one grating in wall, 12in. x 8in.

The permanent inlet ventilation consists of two Tobin's tubes, 9in. x 3in., or 54 sq. in., thus allowing 1.4 sq. in. per head.

The permanent outlet ventilation consists of one grating in ceiling, 1ft. 2in. x 10in., and one grating in wall, 12in. x 8in., or 236 sq. in., thus allowing 6.0 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 131 sq. ft., or one-fourth the floor space.

The light is from behind and the right.

There are six naked gas jets.

GIRLS' (First Floor).

There are five schoolrooms for the girls: Nos. 5, 6, 7, 8 and 11. Nos. 5, 6, 7 and 8 are all class-rooms partitioned from each other by glass slides, and a passage between Nos. 7 and 8 leads to the corridor on the 1st. floor.

Classroom No. 5

Measures 25ft. 3in. \times 24ft., or 606 sq. ft., and the average number of girls present during September, 1903, was 50, thus allowing 12.1 sq. ft. of floor space per head. The total cubic capacity is 8,686 cubic feet, or 173.7 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 1ft. 8in. \times 9in., 6ft. from the floor; four windows opening on hinges at the top (2ft. 9in. \times 2ft. 7in.), one Tobin's tube (9in. \times 3in.), 7ft. from the floor, and one grating in ceiling 12in. \times 10in.

The permanent inlet ventilation consists of one Tobin's tube (9in. \times 3in.), or 27 sq. in., thus allowing .5 sq. in. per head.

The permanent outlet ventilation consists of one opening in the ceiling, 1ft. 2in. \times 10in., or 140 sq. in., thus allowing 2.8 sq. in. per head.

There is not cross ventilation.

Lighting. The lighting consists of two windows, 9ft. \times 5ft. 3in., or a total area of 94 sq. ft., which is equal to one-sixth of the floor space.

The light is received from the left, and indirectly from the right, through the glass slides.

There are six gas jets.

Room No. 6

Is a class-room measuring 27ft. 6in. \times 22ft. 6in., or 619 sq. ft., and the average number of girls present during September, 1903, was 55, thus allowing 11.2 sq. ft. of floor space per head. The total cubic capacity is 8,868 cubic feet, or 161.2 cubic feet per head.

Ventilation. The ventilation consists of two Sherringham windows (1ft. 8in. \times 9in.), 6ft. from the floor, four windows opening on hinges (2ft. 7in. \times 2ft. 9in.), at the top, two Tobin's tubes, (9in. \times 3in.), 7ft. from the floor, and one grating in the ceiling (1ft. 2in. \times 10in.).

The permanent inlet ventilation consists of two Tobin's tubes, 9in. \times 3in., or 54 sq. in., thus allowing 1 sq. in. per head.

The permanent outlet ventilation consists of one grating in the ceiling, 1ft. 2in. \times 10in., or 140 sq. in., thus allowing 2.5 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area of this room is 84 sq. ft., or one-seventh of the floor space.

The light is from the right, but is also received indirectly through the glass slides.

There are six gas jets.

Room No. 7

Measures 25ft. 0in. \times 19ft. 9in., or 493 sq. ft., and the average number of girls present during September, 1903, was 58, thus allowing 8.5 sq. ft. of floor space per head. The total cubic capacity is 6,077 cubic feet, or 104.7 cubic feet per head.

Ventilation The ventilation consists of two hopper window openings (1ft. 8in. \times 9in.), 6ft. from the floor, four windows opening on hinges (2ft. 9in. \times 2ft. 7in.) at the top, one Tobin's tube (9in. \times 3in.), 7ft. from the floor, and one outlet in the ceiling (1ft. 2in. \times 10in.) or 140 sq. in.

The permanent inlet ventilation consists of one Tobin's tube, 9in. \times 3in. The total area of permanent inlet ventilation is 27 sq. in., thus allowing .4 sq. in. per head.

The total area of permanent outlet ventilation is 140 sq. in. (opening in ceiling, 1ft. 2in. \times 10in.), thus allowing 2.4 sq. in. per head.

There is slight cross ventilation, as two panes of glass have been left out of the two partitions on each side of the passage.

Lighting. The total lighting area of this room is 94 sq. ft., which is equal to one-fifth of the floor space.

The light is from the left.

There are six gas jets.

Room No. 8

Is a class-room, measuring 28ft. \times 22ft. 6in., or 630 sq. ft. The average number of girls present during September, 1903, was 41, thus allowing 15.3 sq. ft. of floor space per head. The total cubic capacity is 9,030 cubic feet, or 220.2 cubic feet per head.

Ventilation The ventilation consists of two hopper windows (1ft. 8in. \times 9in.), and four windows opening (2ft. 7in. \times 2ft. 9in.) at the top, two Tobin's tubes, 9in. \times 3in., 7ft. from the floor, one outlet in the ceiling (1ft. 2in. \times 10in.), and an open fireplace into which a cooking gas stove has been fixed.

The permanent inlet ventilation consists of three Tobin's tubes, 9in. \times 3in., or 54 sq. in., thus allowing 1.3 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling (1ft. 2in. \times 10in., or 140 sq. in.), thus allowing 3.4 sq. in. per head, not calculating the open fire-place.

There is slight cross ventilation, through the glass partitions, as in No. 7 room.

Lighting. The total lighting area is 84 sq. ft., or nearly one-seventh of the floor space.

The light is from the right.

There are six naked gas jets.

Large Room No. 11

Measures 54ft. 0in. \times 21ft. 6in., or 1,161 sq. ft., and the average number of girls present during September, 1903, was 92, thus allowing 12.6 sq. ft. of floor space per head. The total cubic capacity is 17,705 cubic feet, or 192.4 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows (1ft. 8in. \times 9in.) 6ft. from the floor, four windows opening on hinges (2ft. 7in. \times 2ft. 9in.), and four (2ft. 0in. \times 2ft. 9in.) opening at the top, one Tobin's tube, 9in. \times 3in., 7ft. from the floor, one opening in the ceiling (1ft. 2in. \times 10in.), and one grating in the wall, 12in. \times 8in., one foot from the ceiling.

The permanent inlet ventilation consists of one Tobin's tube, 9in. \times 3in. The total area of permanent inlet ventilation is 27 sq. in., or .3 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, 1ft. 2in. \times 10in., or 140 sq. in., and one outlet in a wall, 12in. \times 8in., or 96 sq. in. The total area of permanent outlet ventilation is 236 sq. in., or 2.5 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 180 sq. ft., or one-sixth of the floor space.

The light is from the left and behind.

There are 12 naked gas jets.

INFANTS' (Ground Floor).

There are four rooms for the infants: Nos. 5, 8, 9 and 10 on the ground floor.

Room No. 5

Is the large room measuring 46ft. 9in. \times 24ft. 0in., or 1,122 sq. ft. and the average number of infants present during June, 1903, was 97, thus allowing 11.5 sq. ft. of floor space per head. The total cubic capacity is 16,082 cubic feet, or 165.7 cubic feet per head.

The average number attending in each room for the infants' department cannot be given accurately, as the classes vary, but the numbers received are as accurate as can be obtained.

Ventilation. The ventilation consists of one hopper window, 2ft. 8in. \times 9in.; two hopper windows, 1ft. 8in. \times 9in., 6ft. from the floor; six windows opening on hinges, 2ft. 9in. \times 2ft. 7in., at the top; three Tobin's tubes, 9in. \times 3in., 7ft. from the floor, and 2 outlets in the ceiling, 12in. \times 8in.

The permanent inlet ventilation consists of three Tobin's tubes, 9in. \times 3in., or 81 sq. in., thus allowing .8 sq. in. per head.

The permanent outlet ventilation consists of two gratings in the walls, 12in. \times 8in., or 192 sq. in., thus allowing 1.9 sq. in. per head.

There is an open fire-grate, but no fire-guard.

There is also cross ventilation.

Lighting. The total lighting area of this room is 166 sq. ft., which is equal to one-sixth of the floor space.

The light is from the right and left.

The two lower rows of panes in two windows have been painted yellow, to prevent persons in the street from looking in.

There are 12 naked gas jets.

Room No. 8

Is used for the babies. It measures 26ft. 9in. \times 16ft. 0in., or 423 sq. ft., and the average number present during the month of June, 1903, was about 70, thus allowing 6.1 sq. ft. of floor space per head.

The total cubic capacity is 6,170 cubic feet, or 88.1 cubic feet per head.

Ventilation The ventilation consists of one hopper window opening, 1ft. 8in. \times 9in., 6ft. from the floor; two windows opening 2ft. 0in. \times 2ft. 7in., at the top; one grating in wall, 12in. \times 8in., and an open fire-grate, with a fire-guard attached.

The permanent outlet ventilation consists of one grating in the wall, 12in. \times 8in., or 96 sq. in., thus allowing 1.3 sq. in. per head, not calculating the open fireplace.

There is no permanent inlet ventilation, and the ventilation is not cross.

Lighting The total lighting area is 47 sq. ft., or one-ninth of the floor space.

The light is from the left, and indirectly from room No. 9, through the glass slides.

There are six gas jets.

Room No. 9

Measures 26ft. 9in. \times 16ft., or 428 sq. ft., and the average number of babies present during the month of June was about 45, thus allowing nearly 9.5 sq. ft. of floor space per head. The total cubic capacity is 6,170 cubic feet, or 137.1 cubic feet per head.

Ventilation The ventilation consists of one hopper window, 1ft. 8in. \times 9in., 6ft. from the floor, and two windows opening on hinges, 2ft. \times 2ft. 7in., at the top, and one grating in a wall, 12in. \times 8in., near the ceiling.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one grating in the wall, 12in. \times 8in., or 96 sq. in., thus allowing 2.1 sq. in. per head.

There is also an open firegrate, but no fire-guard.

Lighting. The lighting area of this room is 47 sq. ft., or one-ninth of the floor space.

The lighting is from the right, and indirectly from the front, through the glass slides.

There are six gas jets.

Room No. 10

Is an infants' class-room, measuring 26ft. 9in. \times 21ft. 0in., or 561 sq. ft., and the average number of infants present during the month of June, 1903, was about 60, thus allowing 9.3 sq. ft. of floor space per head.

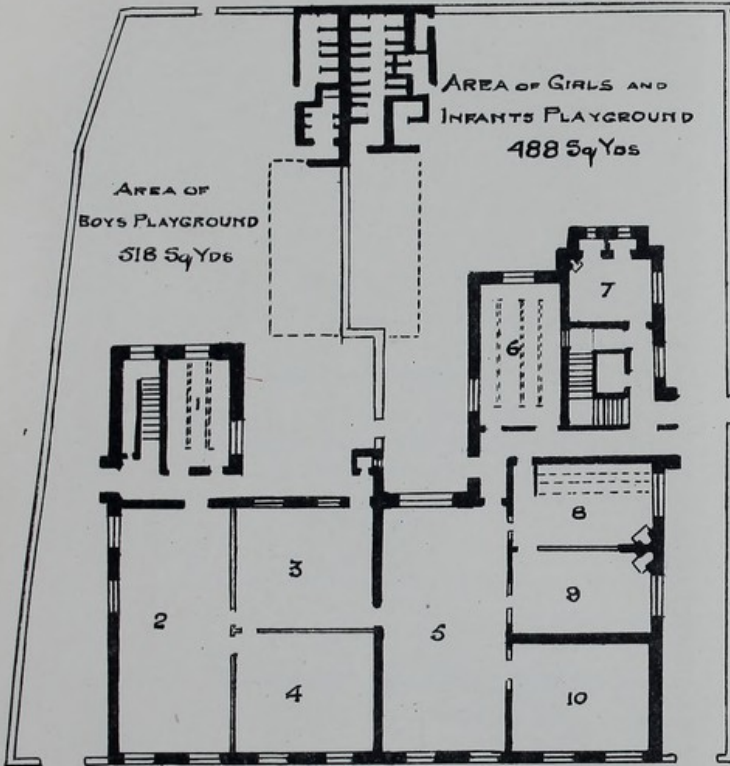
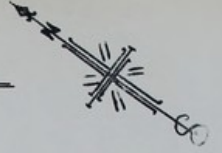
The total cubic capacity is 8,004 cubic feet, or 133.4 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 1ft. 8in. \times 9in., 6ft. from the floor, and four windows opening 2ft. 9in. \times 2ft. 7in., at the top; two Tobin's tubes, 7in. \times 3in., 7ft. from the floor; and one grating in the ceiling, 12in. \times 8in.

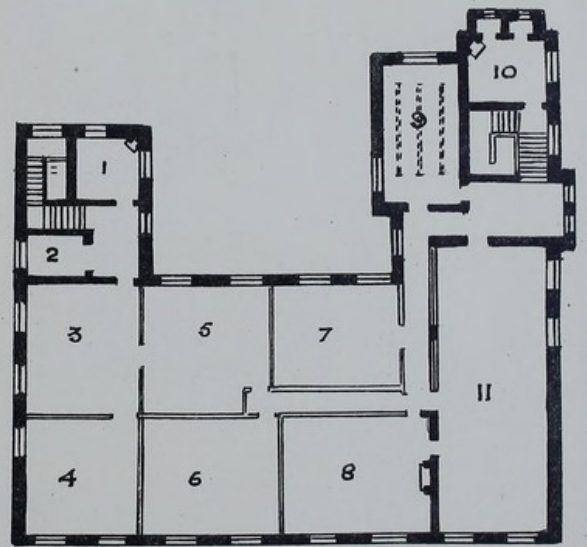
The permanent inlet ventilation consists of two Tobin's tubes, 7in. \times 3in., or 42 sq. in., thus allowing .7 sq. in. per head.

ST. ANNE'S SCHOOL

Scale 30 feet to 1 inch



GROUND FLOOR PLAN



FIRST FLOOR PLAN

Room marked.	Average height	Cubic feet.
1.....	20' 0" x 12' 0" x 12' 9"	= 3060
2.....	46' 9" x 21' 6" x 14' 4"	= 14406
3.....	27' 6" x 24' 0" x 14' 4"	= 9466
4.....	27' 6" x 22' 6" x 14' 4"	= 8868
5.....	46' 9" x 24' 0" x 14' 4"	= 16082
6.....	24' 3" x 16' 0" x 14' 5"	= 5593
7.....	15' 5" x 12' 0" x 10' 6"	= 1942
8.....	26' 9" x 16' 0" x 14' 5"	= 6170
9.....	26' 9" x 16' 0" x 14' 5"	= 6170
10.....	26' 9" x 21' 0" x 14' 3"	= 8004

Room marked	Average height.	Cubic feet
1.....	12' 3" x 12' 0"	
2.....	12' 8" x 8' 0"	
3.....	24' 0" x 23' 3" x 14' 4"	= 7997
4.....	23' 3" x 22' 6" x 15' 3"	= 7977
5.....	25' 3" x 24' 0" x 14' 4"	= 8686
6.....	27' 6" x 22' 6" x 14' 4"	= 8868
7.....	25' 0" x 19' 9" x 14' 4"	= 6077
8.....	28' 0" x 22' 6" x 14' 4"	= 9030
9.....	24' 3" x 16' 0"	
10.....	15' 5" x 12' 0" x 12' 3"	= 8046
11.....	54' 0" x 21' 6" x 15' 3"	= 17705



The permanent outlet ventilation consists of two gratings in walls near the ceiling, 12in. x 8in., or 192 sq. in., thus allowing 3.2 sq. in. per head. There is an open fire-place.

There is no cross ventilation.

Lighting. The total lighting area is 94 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left.

There are six gas jets in this room.

The two lower window panes are painted yellow.

Recommendations.

- I. To improve the ventilation openings where necessary.
- II. To remove the ash-tubs from the boys' covered playground.
- III. To arrange that rooms No. 4, ground floor (boys), No. 7 (girls), and No. 8 (infants), shall not contain more than 61, 49, 47 scholars respectively.
- IV. To trap the lavatory waste pipes.
- V. To repair the floors where the wooden blocks are loose.

PARISH HIGHER GRADE SCHOOLS.

These schools, which consist of boys', girls', and infants' departments, are in two blocks.

The main school was erected in 1871, and is a two-storey building.

The new building, which is situated in Dandy Walk, was erected in 1895.

The boys occupy one part of the new building.

Playgrounds.

The girls' playground measures 407 sq. yds., and the boys' 1,120 sq. yds. The girls' playground is situated behind and to the north of the school. That for boys is situated in front of the school. The two playgrounds are separated from each other. The surface is asphalted, and slopes away from the building, and is in good condition.

Sanitary Conveniences

The boys' conveniences consist of "Adams'" brown earthenware trough. There are six compartments, measuring 2ft. 5in. to seat-board and 2ft. 2in. wide; the walls are constructed of brown glazed

bricks, the floors of asphalt, and they slope to a gully. There is a passage in front of the compartments 3ft wide, not open to the external air above. The conveniences are well lighted and ventilated.

There are 37 linear feet of urinals, on the south-east side of the conveniences. The back is made of slate, the floor asphalted, and a channel has been formed leading to a properly trapped gully.

These sanitary conveniences are about 3yds away from the boys' main room, immediately opposite two windows.

They are flushed by an automatic cistern four times a day, and floors and urinals every morning.

The girls' sanitary conveniences are situated behind the school, about 6yds. from the nearest window. They consist of the McFarlane iron troughs flushed by hand. There are five compartments, measuring 3ft. to seatboard, and 2ft. 4in. wide, and a passage in front, not open to the external air above.

The conveniences are well lighted and ventilated.

There is also a Jennings' trapless closet close to the dining-room in the main school. The compartment is lighted by a window 3ft. 9in. \times 1ft. 9in.; ventilated by one tube, 4in. \times 4in., and outlet in wall, 9in. \times 3in.

New Building. There are three sanitary conveniences for the use of the boys who occupy part of this building. They are of a scort hopper type discharging into one common pipe directly underneath. Each hopper is flushed separately. The conveniences are flushed by an automatic flushing cistern four times a day.

Each compartment measures 1ft. 6in. to the seatboard, and 2ft. 2in. wide; the inside walls are whitewashed, and the floor is asphalted.

The doors are left 3in. short at the top, and 2in. at the bottom, for ventilation.

Opposite the compartments are 8 linear feet of urinals, the back is constructed of slate, and the floor of asphalt, and an earthenware channel leading to a properly trapped gully has been provided. The urinal is open to the external air above. They are flushed every morning by hand, and the rain-water from the roof of the conveniences discharges into the channel.

These conveniences are situated on the left of the entrance from Dandy Walk.

There are three sanitary conveniences for the infant boys, and four for the infant girls, situated in a covered archway leading to the school.

They are of the same type as those for the boys.

These conveniences run in one straight line, but the boys' are separated from the girls' by a division wall. They are about 5yds. from the entrance to the infants' school rooms.

There are four linear feet of urinals opposite the boys' compartments, not open to external air above; the back is constructed of slate, the floor of asphalt, and a channel has been formed leading to a properly trapped gully. They are flushed every morning by hand. The passage in front of the girls' compartments is not carried up to the external air.

The conveniences are well-lighted and ventilated.

Cloak-Rooms.

The cloak-room (No. 6) for the boys in the main building is situated underneath the recess in the girls' large room, 1st floor, and is lighted by three foot lights.

The room measures about 16ft. \times 14ft. 3in., but the centre of the room floor is open, to allow the footlights in the recess in girls' large room to light the lavatory room underneath.

There are about 100 hooks, placed on racks and against the walls.

There is no ventilation, but the lavatory room underneath ventilates into this cloak-room. The ceiling is low, and the room is dark, and is warmed by the heat generated from the boiler-house below.

The boys also use the top of the staircase as a cloak-room.

The girls' cloak-room (No. 4) is situated on the right of the entrance to the staircase behind the school, and is marked No. 4 on the plan. It is disconnected from any of the schoolrooms.

There are about 150 pegs, on racks and against the walls.

The room is warmed by hot water pipes.

Clothes are also hung on racks against the wall in a passage leading to the girls' cloak-room.

Cloak-Room in New Building.

There is a cloak-room (No. 1) for the boys who use the large room, 19ft. 6in. \times 7ft. 6in., and is well lighted by a skylight and two window panes, 3ft. 0in. \times 6in., in the skylight will open for ventilation. The floor is constructed of asphalt, and the room is warmed by hot water pipes.

There are about 80 pegs, placed on racks and walls.

Infants' Cloak-room.

The infants' cloak-room (No. 2) is situated on the right of the entrance to the infants' room, measures 30ft. 6in. \times 7ft. 6in., and is

lighted by a large skylight, and two window-panes made to open for ventilation, 3ft x 6in.

There are 151 pegs, placed on racks and walls.

The room is warmed by hot water pipes, and the floor is constructed of concrete.

Lavatory Accommodation.

There are four white glazed lavatory basins in the girls' cloak-room, the waste pipes of which discharge into one common pipe, and thence over a gully outside. There is also a lavatory basin at the entrance to the w.c., near the dining-room, and the waste pipe discharges over a gully outside.

There are four white-glazed lavatory basins for the boys, under the boys' cloak-room, and the waste pipes discharge into one common pipe, and thence over a gully inside.

There are four white glazed lavatory basins in the boys' cloak-room in the new block, the waste pipes of which discharge into one common pipe, and thence over a gully outside.

There are four white glazed lavatory basins in infants' cloak-room, the waste pipes of which discharge similarly.

Drainage.

The drainage appears to be satisfactory. The downspouts in the main school are directly connected to the drains.

Refuse.

There are two ash tubs, near the girls' conveniences, behind the school.

Heating.

The heating is carried out by means of hot water pipes. In the main school they are placed round the room, and in the new school they form radiators.

Floors.

The floors in the main school are constructed of tongued and grooved boards with a cavity underneath, but the floor of the new school is constructed of rectangular blocks.

There is a grating in the floor of the girls' large room, which at one time was used for discharging warm air into the room.

The floors are swept every night, and cleansed at Christmas, Easter and Mid-Summer.

Walls.

The walls of the main school on the ground floor are plastered and painted a dark green colour up to a height of 4ft., and above this height a pale green colour. On the 1st floor the walls are plastered and painted a chocolate colour up to 4ft., and above this a pale green. In the new block they are plastered, and painted a chocolate colour up to 4ft.,—above this height, pale green.

Staircases.

There are two staircases, one at the front of the school and one at the back.

The main staircase is very wide, and consists of one flight of steps to the first landing, and then divides into two; one leading to the boys' room, and one to the girls'. The steps are constructed of stone, and there is no handrail.

The staircase is well lighted.

The staircase behind leads directly into the girls' schoolrooms, it is well lighted, and the steps are constructed of wood. There are two flights.

MAIN SCHOOL.

There are two rooms, and the chemical class-room for boys, on the ground floor, and two rooms on the 1st floor.

There is one room on the ground floor, and there are three rooms on the 1st floor for the girls. Occasionally the girls use the chemical class-room for lessons in cookery.

GROUND FLOOR.—Room No. 1.

This is the chemical class-room, and measures 35ft. 7in. \times 26ft., or 925 sq. ft

The average number of boys cannot be obtained accurately owing to constant changing of classes, so the approximate number present at all in the room has been taken throughout the boys' department.

The number in this room is about 45, thus allowing 20.5 sq. ft. of floor space per head. The total cubic capacity is 14,802 cubic feet, or 328.9 cubic feet per head.

Ventilation. The ventilation consists of four casement windows, opening outwards, 4ft. \times 1ft. 9in., and four opening on hinges, 1ft. 6in. \times 1ft. 6in., at the upper parts of the windows; one outlet grating opening in the chimney-breast (1ft. 6in. \times 1ft. 2in.), and two gratings in outer wall (9in. \times 3in.), near the ceiling.

The permanent outlet ventilation consists of one grating in the chimney-breast, and two gratings in outer wall near the ceiling, or 306 sq. in., thus allowing 6.7 sq. in. per head.

Lighting. The total lighting area is 135 sq. ft., which is equal to one-sixth of the floor space.

The light is from behind and the left.

There are 18 naked gas jets.

Nearly 100 sq. ft. of the glass are semi-transparent.

Room No. 2.

This is the boys' large room, measuring 60ft. \times 26ft., or 1,560 sq. ft., and the approximate number in this room is about 85 thus allowing 18.3 sq. ft. of floor space per head. The total cubic capacity is 24,960 cubic feet, or 293.6 cubic feet per head.

Ventilation. The ventilation consists of seven casement windows (4ft. \times 1ft. 9in.) opening outwards, and seven (1ft. 6in. \times 2ft. 3in.) opening on hinges at the top of the windows, two gratings in the outside wall (9in. \times 3in.), and two gratings in the chimney-breast (1ft. 6in. \times 1ft. 2in.). One of the latter is papered over, and there are two open firegrates.

The permanent inlet ventilation consists of two gratings in the outside wall, near the ceiling (9in. \times 3in.) or 54 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of two gratings in the chimney-breast (1ft. 6in. \times 1ft. 2in.), or 504 sq. in., thus allowing 5.9 sq. in. per head, excluding the open fire-grates.

Lighting. The total lighting area is 173 sq. ft., which is equal to one-ninth of the floor space.

The light is from behind and the left.

There are 111 sq. ft. of plain glass, and 62 sq. ft. of semi-transparent glass.

There are 48 gas jets.

Room No. 5.

This is a boys' class-room, and is divided from the large room by glass slides. The room measures 37ft. \times 14ft. 4in., or 530 sq. ft., and the approximate number in this room is 45, thus allowing 11.7 sq. ft. of floor space per head. The total cubic capacity is 8,485 cubic feet, or 188.5 cubic feet per head.

Ventilation. The ventilation consists of two casement windows, 4ft. \times 1ft. 9in., and one casement window, 2ft. 10in. \times 1ft. 9in.; one upper hopper window (1ft. 6in. \times 1ft. 9in.), two opening on hinges at the upper parts (1ft. 6in. \times 1ft. 9in.), and one grating in the chimney-breast (1ft. 6in. \times 1ft. 2in.), and an open fire-grate.

There is no permanent inlet ventilation in this room.

The permanent outlet ventilation consists of one grating in the chimney-breast (1ft. 6in. \times 1ft. 2in.), or 252 sq. in., thus allowing 5.6 sq. in. per head, excluding the open fire-grate.

Lighting. The total lighting area of this room is 77 sq. ft., which is equal to one-seventh of the floor space.

The light is from the right and front.

Room No. 3.

This room is used by the girls, measures 24ft. \times 16ft., or 384 sq. ft., and the average number of girls present during September, 1903, was 32, thus allowing 12.0 sq. ft. of floor space per head. The total cubic capacity is 6,144 cubic feet, or 192 cubic feet per head.

Ventilation. The ventilation consists of two casement windows, 4ft. \times 1ft. 9in, two opening on hinges at their upper parts (1ft. 6in. \times 1ft. 0in.), one grating in the chimney-breast, 1ft. 6in. \times 1ft. 2in., and an open fire-grate.

There are no permanent inlet ventilators.

The permanent outlet ventilation consists of one grating in the chimney-breast, 1ft. 6in. \times 1ft. 2in., or 252 sq. in., thus allowing 7.9 sq. in. per head.

Lighting. The total lighting area is 58 sq. in., which is equal to one-sixth of the floor space.

The light is from the left.

There are eight gas jets.

FIRST FLOOR.

There are five rooms used for teaching. Nos. 12 and 13 are used by the boys, and Nos. 8, 10 and 11 by the girls.

Room No. 8.

This is the girls' large room, measures 1,908 sq. ft., and the average number of scholars present during September, 1903, was 105, thus allowing 18.1 sq. ft. of floor space per head.

The total cubic capacity is 30,536 cubic feet, or 291.0 cubic feet per head.

Ventilation. The ventilation consists of one casement window 3ft. 0in. \times 1ft. 9in.; five, 2ft. \times 1ft. 6in.; and two, 3ft. \times 1ft. 3in.; two hopper windows, 1ft. 0in. \times 2ft. 5in.); five, 1ft. 6in. \times 1ft. 0in.; and two, 1ft. 3in. \times 1ft. 0in., at a height of 8ft. from the floor; two open fire-grates, with a grating in each chimney-breast (1ft. 6in. \times 1ft. 2in.).

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings (1ft. 6in. \times 1ft. 2in.) leading to the roof. The total area of permanent outlet ventilation is 504 sq. in., thus allowing 4.8 sq. in. per head.

Lighting. The total lighting area of this room is 274 sq. ft., which is equal to almost one-seventh of the floor space.

The light is from right, left, and behind, and from above and the right in a recess at the top of the staircase.

Room No. 9

Is the recess at the top of the staircase, and has been calculated in the large room, No. 8.

Room No. 10.

This is the girls' class-room, measuring 21ft. \times 15ft. 10in., or 332 sq. ft., and the average number of girls present during September, 1903, was 27, thus allowing 12.3 sq. ft., of floor space per head. The total cubic capacity is 5,320 cubic feet, or 197.0 cubic feet per head.

Ventilation. The ventilation consists of one casement window, 2ft. 6in. \times 1ft. 6in., and one hopper window, 2ft. 2in. \times 1ft. 0in.; one skylight opening on the roof, 1ft. 6in. \times 4ft. 0in.; one open fire-grate; one grating in the chimney-breast (1ft. 8in. \times 1ft. 4in.), and one Tobin's tube (11in. \times 3in.), at a height of 7ft. from the floor.

The permanent inlet ventilation consists of the Tobin's tube, or 33 sq. in., thus allowing 1.2 sq. in. per head.

The permanent outlet ventilation consists of the grating in the chimney-breast, or 320 sq. in., thus allowing 11.8 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 46 sq. ft., which is equal to one-seventh of the floor space.

The light is received from behind and above.

There are three gas jets.

Room No. 11.

This is a girls' class-room, measuring 22ft. \times 15ft., or 330 sq. ft., and the average number present during September, 1903, was 28, thus allowing 11.7 sq. ft., of floor space per head. This room is entered from the recess in the girls' large room. The total cubic capacity is 5,280 cubic feet, or 188.5 cubic feet per head.

Ventilation. The ventilation consists of one casement window, 2ft. 9in. \times 1ft. 6in., and one hopper window, 2ft. 2in. \times 9in., at a height of 8 ft. from the floor; one Tobin's tube, 11in. \times 3in.; an open fire-grate, and one grating in the chimney-breast, 1ft. 6in. \times 1ft. 2in., leading to an outlet in the roof.

The permanent inlet ventilation consists of the Tobin's tube, or 33 sq. in., thus allowing 1.1 sq. in. per head.

The permanent outlet ventilation consists of the grating in the chimney-breast, or 252 sq. in., thus allowing 9 sq. in. per head.

Lighting. The total lighting area is 51 sq. ft., which is equal to one-sixth of the floor space.

The light is from left and above, by a skylight in the roof.

There are eight gas jets.

Room No. 12.

This is the boys' large room. It measures 60ft. \times 26ft., or 1,560 sq. ft., and the approximate number of boys in the room is about 85, thus allowing 18.3 sq. ft. of floor space per head. The total cubic capacity is 24,960 cubic feet, or 291.3 cubic feet per head.

Ventilation. The ventilation consists of five casement windows, 2ft. \times 1ft. 6in.; five hopper windows (1ft. 1in. \times 2ft. 2in), at a height of 8ft. from the floor; two casement windows (3ft. \times 1ft. 9in.), and two hopper windows, (1ft. 1in. \times 2ft. 0in.), two open firegrates, two gratings in the chimney-breasts (1ft. 6in. \times 1ft. 2in.), one skylight frame opening 4ft. \times 1ft. 4in., and five circular openings in one gable end, 6in. in diameter.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two gratings in the chimney-breasts, 1ft. 6in. \times 1ft. 2in., and five circular openings in gable-end wall, near the roof, 6in. in diameter. The total area of permanent outlet ventilation openings is 532 sq. in., thus allowing 6.2 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 227 sq. ft., which is equal to one-sixth of the floor space.

Of the 227 sq. ft. of glass only 44 sq. ft. are transparent, the rest semi-transparent.

The light is from the back, left and slightly from above.

There are 48 gas jets .

Room No. 13.

This is the boys' class-room, measuring 22ft. x 15ft., or 330 sq. ft., and the approximate number in this room is 30, thus allowing 11sq. ft. of floor space per head. The total cubic capacity is 5,280 cubic feet, or 176.0 cubic feet per head.

Ventilation. The ventilation of this room consists of one casement window, 3ft. x 1ft. 9in.; one hopper window (2ft. 6in. x 1ft. 0in.), one opening in the skylight, 4ft. x 1ft. 4in., one open fire-place, and a grating in chimney-breast (1ft. 6in. x 1ft. 2in.).

The permanent inlet ventilation is nil.

The permanent outlet ventilation consists of one opening in the chimney-breast, 1ft. 6in. x 1ft. 2in., leading to an outlet on the roof. The total area is 252 sq. in., thus allowing 8.4 sq. in. per head.

There is slight cross ventilation.

Lighting. The total lighting area of this room is about 40 sq. ft., which is equal to one-eighth of the floor space.

The light is from the left and above.

There are 14 gas jets.

Of the 40 sq. ft. of glass about 15 sq. ft. are clear, and the remainder thick and semi-transparent.

NEW BUILDING.

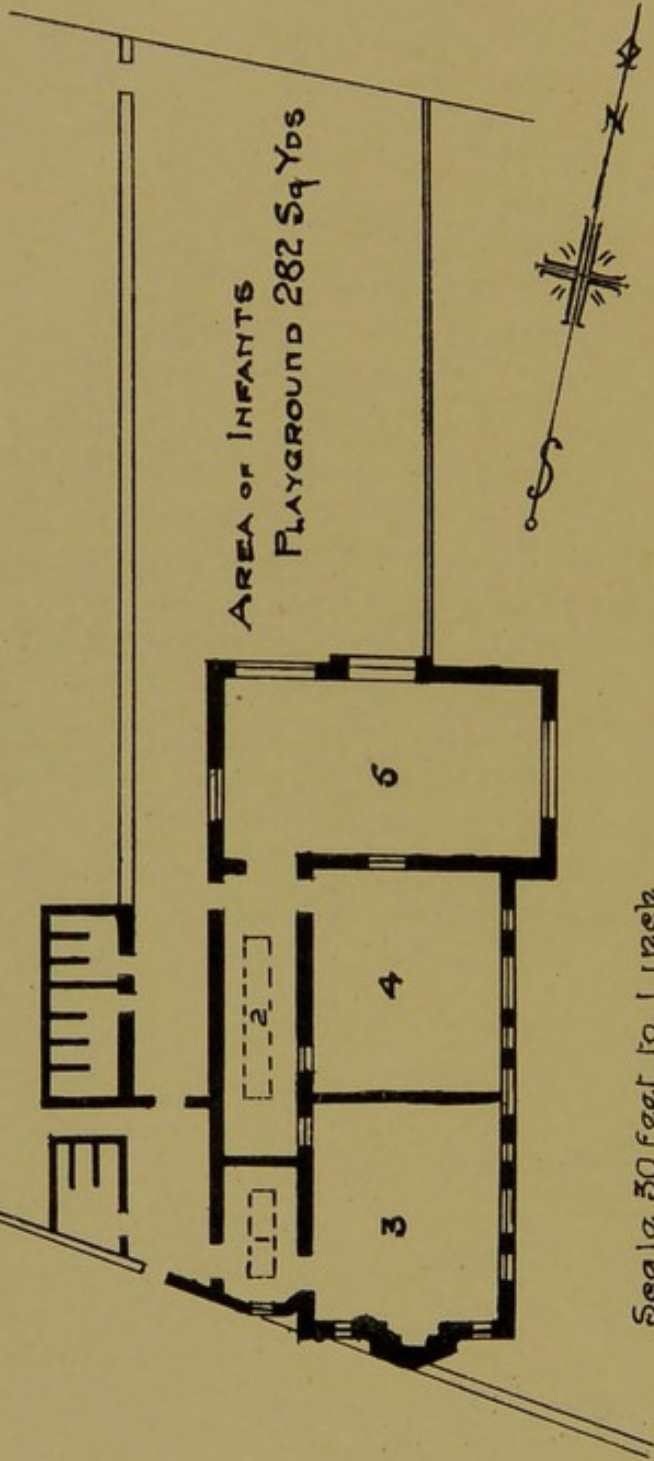
This building consists of five rooms: Nos. 1 and 2 are cloak-rooms; Nos. 3 and 4 are one room, but can be divided into two; and the boys assemble in 3 and 4. No. 5 is the infants' room.

Rooms Nos. 3 and 4.

These two rooms are taken together, and measure 54ft. x 22ft., or 1,188 sq. ft., and the average number of boys in these rooms during September, 1903, was 61, thus allowing 19.4 sq. ft. of floor space per head. The total cubic capacity is 19,008 cubic feet, or 311.6 cubic feet per head.



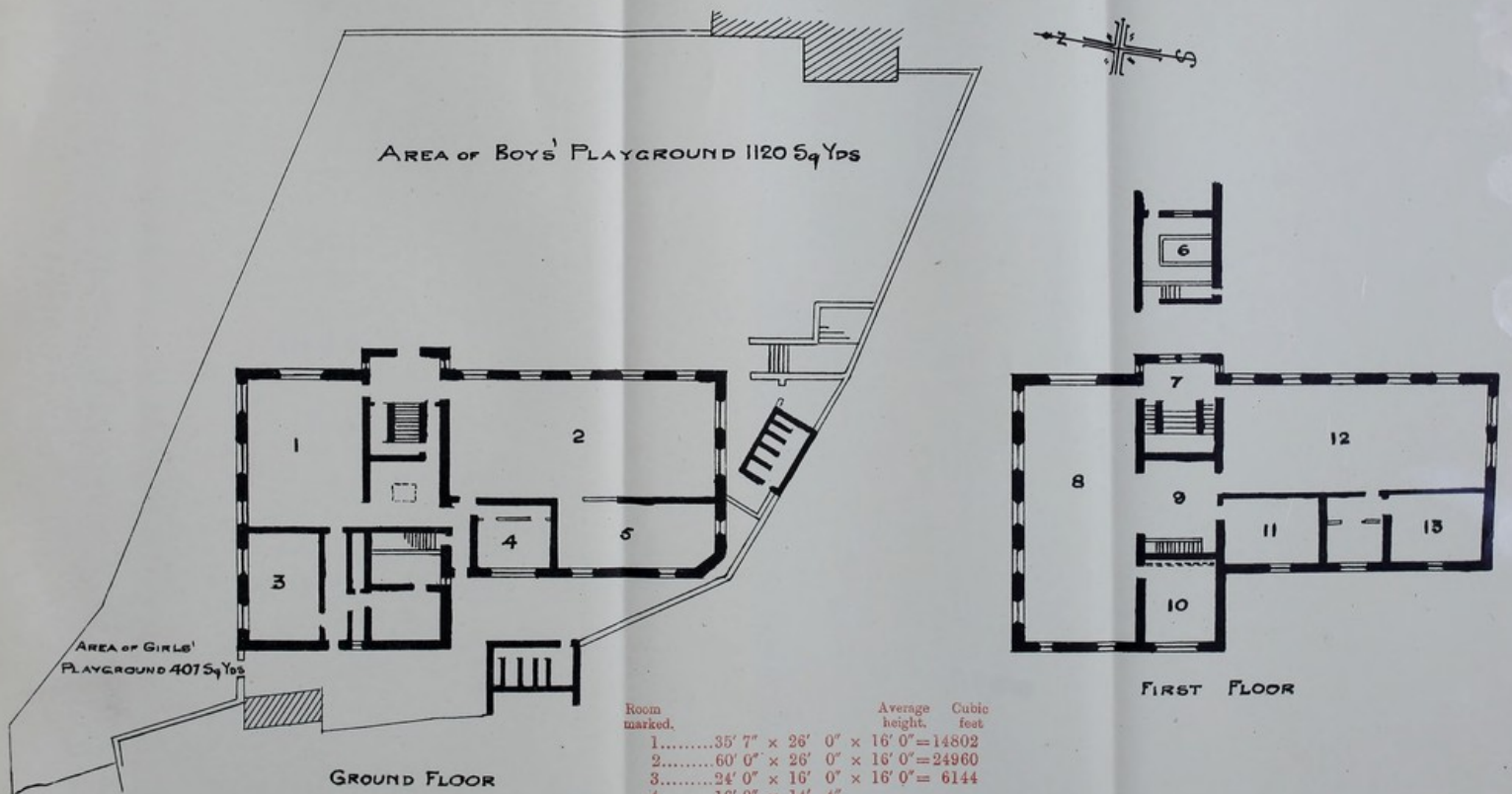
— ST. MARY'S INFANTS SCHOOL —



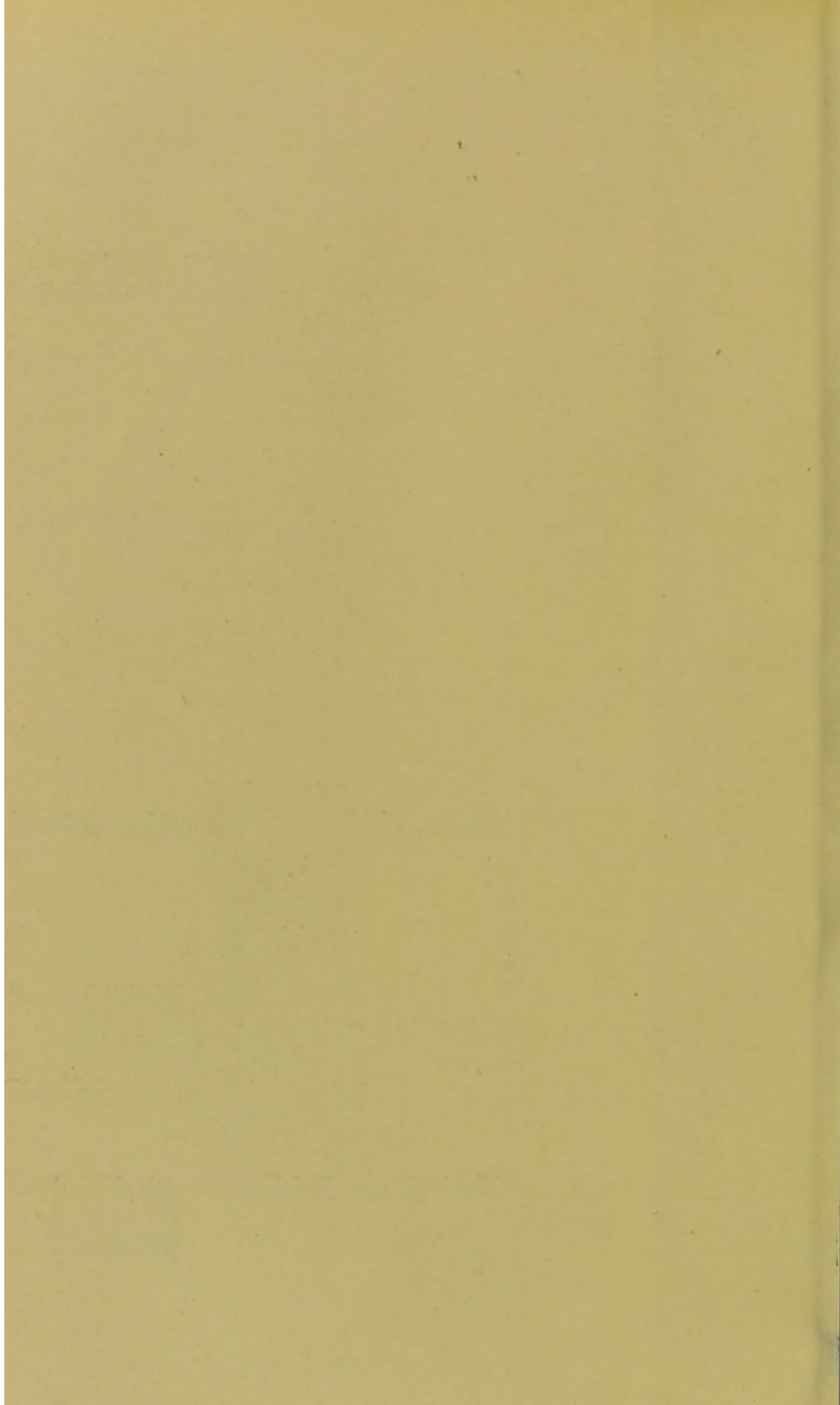
Room marked	Dimensions	Average height.	Cubic feet.
1.....	19' 6" x 7' 6"	16' 0"	2340
2.....	30' 6" x 7' 6"	16' 0"	3656
3.....	27' 0" x 22' 0"	16' 0"	9504
4.....	27' 0" x 22' 0"	16' 0"	9504
5.....	36' 0" x 22' 0"	16' 0"	12672

Scale 50 feet to 1 inch

PARISH CHURCH HIGHER GRADE SCHOOL



Room marked.	Average height.	Cubic feet
1.....35' 7" x 26' 0"	x 16' 0"	= 14802
2.....60' 0" x 26' 0"	x 16' 0"	= 24960
3.....24' 0" x 16' 0"	x 16' 0"	= 6144
4.....16' 9" x 14' 4"		
5.....37' 0" x 14' 4"	x 16' 0"	= 8485
6.....16' 0" x 14' 3"		
7.....16' 0" x 10' 0"		
8.....60' 0" x 26' 0"	x 16' 0"	= 24960
9.....20' 6" x 17' 0"	x 16' 0"	= 5576
10.....21' 0" x 15' 10"	x 16' 0"	= 5320
11.....22' 0" x 15' 0"	x 16' 0"	= 5280
12.....60' 0" x 26' 0"	x 16' 0"	= 24960
13.....22' 0" x 15' 0"	x 16' 0"	= 5280



Ventilation. The ventilation consists of 16 sash windows, 2ft. 9in. \times 1ft. 9in.; eight sash windows, 2ft. 10in. \times 2ft. 9in.; four hopper windows, 2ft. 10in. \times 1ft. 0in.; and four hopper windows, 1ft. 6in. \times 1ft. 0in., opening at the upper parts; four windows opening on hinges, at the top, 2ft. 0in. \times 1ft. 9in.; five radiators, discharging warm air into the room, having combined openings of 2ft. \times 3in. each, at a height of 3ft. 6in. from floor; two outlets in walls, one at each end of the room (1ft. 8in. \times 1ft. 8in.), and an open fire-place.

The permanent inlet ventilation consists of five warm air radiators having an area of 360 sq. in., thus allowing 5.9 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the walls (1ft. 8in. \times 1ft. 8in.), and an open fire-place.

The total area of permanent outlet ventilation is 800 sq. in., excluding the fire-grate, thus allowing 13.1 sq. in. per head.

Lighting. The total lighting area is about 177 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left and front.

There are 16 naked gas jets.

Room No. 5.

This is the infants' room, and measures 36ft. \times 22ft., or 792 sq. ft. The average number present during June, 1903, was 63, thus allowing 12.5 sq. ft. of floor space per head. The total cubic capacity is 12,672 cubic feet, or 201.1 cubic feet per head.

Ventilation. The ventilation consists of six sash windows, 3ft. 9in. \times 2ft. 11in. each; six sash windows, 2ft. 8in. \times 2ft. 2in.; and six sash windows, 2ft. \times 2ft. 2in. each; one hopper window, 2ft. 2in. \times 9in.; one, 2ft. 6in. \times 9in.; and one 2ft. 8in. \times 9in., opening at top of windows; one open fire-grate (without guard), grating in chimney-breast (1ft. 8in. \times 1ft. 8in.), and five warm-air radiator inlets (2ft. \times 3in.).

The permanent inlet ventilation consists of five warm air radiators having an area of 360 sq. in., thus allowing 5.7 sq. in. per head.

The permanent outlet ventilation consists of an open fire-grate, one grating in the chimney-breast (1ft. 8in. \times 1ft. 8in.), or 400 sq. in., excluding firegrate, thus allowing 6.3 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 165 sq. ft., which is equal to almost one-fifth of the floor space.

The light is from behind, the left, and slightly from the right.

There is one window over the gallery, which is very high, owing to the archway leading to the entrance.

There are eight gas jets.

Recommendations.

- I. To re-construct the sanitary conveniences for girls.
- II. To provide sufficient ventilation openings where necessary.
- III. To provide clear glass in windows.
- IV. To fix fire-guards in the infants' rooms.
- V. To fix hand-rails to the staircases.

ST. MATTHEW'S SCHOOL.

This school was erected in 1880, enlarged in 1890, and extended again in 1898. It is a one-storey building of stone. There are two storeys in the new part, which is jointly used by the day school and the Sunday school. There are seven Boyle's ventilators in the roof.

Playgrounds.

There are three flagged playgrounds—two for boys, and one for girls and infants. Two playgrounds are separated by a brick wall.

There are no covered playgrounds.

The playgrounds measure 166, 101, and 119 sq. yds. respectively.

Sanitary Conveniences.

The sanitary conveniences are of the earthenware trough type, and are 6yds. away from the school.

There are four compartments and a urinal for the boys, and eight compartments for girls and infants; these are flushed three times a day.

The urinal for the boys is formed partly by the wall of the passage in front of the conveniences, which passage is open at the top, and about 7ft. high.

There are four lavatory basins in a compartment adjoining the conveniences.

Walls.

The internal surfaces of the walls are boarded to a height of 4ft. 6in. from the floor, and coloured green.

Floor.

The floor in the mixed school is boarded on concrete, and in the infants' it is of wooden blocks.

Lighting.

The artificial light in part of the mixed school is incandescent and electric, and in the infant school it is incandescent.

The glass in the windows of the infants' department is chiefly plain. The partition between the class-rooms in the infants' department is of wood and glass.

In the mixed school the glass is semi-transparent.

Heating.

The rooms are heated by hot water pipes and radiators.

Cloak-Rooms.

There are three cloak-rooms—two for girls and one for infants.

The cloak-room for the infants is situated near the back entrance to the infant school.

There are 134 pegs. There is no direct light into this cloak-room.

It is ventilated by a Sherringham valve inlet. The room is heated by means of a hot water pipe, carried under the floor, over which there is an iron grating.

One cloak-room for the girls is situated near class-room, No. 6.

The roof of this cloak-room is glass, and covers the lower panes of the window in class-room No. 6.

There are 70 pegs arranged on the walls and short racks. The clothes are crowded together.

The second cloak-room for girls is situated near the back entrance to the new building, being part of class-room No. 1, from which it is separated by a wooden and glass partition, 9ft. 3in. high.

There are 78 pegs arranged around the walls.

There are 72 pegs for clothes on the landing leading to the drilling-room on the first floor, and these are for the use of the scholars who are using the drilling-room.

The mixed department consists of two large rooms, five class-rooms, and a drilling-room.

MIXED SCHOOL.—Room No. 2.

The average number present during September, 1903, was 57.

The total floor area measures 1,000 sq. ft., or an average of 17.5 sq. ft. per scholar. The total cubic capacity is 14,500 cubic feet, or 254.3 cubic feet per head.

Lighting. The total lighting area measures 94 sq. ft., or about one-tenth the floor space.

The windows are all on one side, and the light is received chiefly from the left.

Ventilation. The total permanent outlet ventilation area measures 288 sq. in., or an average of 5.0 sq. in. per scholar, and consists of four openings in the ceiling, 12in. \times 6in.

The total permanent inlet ventilation area measures 37 sq. in., or an average of .6 sq. in. per scholar, and consists of four circular window-sill ventilators, 3½in. in diameter, 4ft. above the floor. There are four window hoppers, opening 18in. \times 9in.

The ventilation is partly cross; all the windows are made to open.

Room No. 3.

The average number present in this room during September, 1903, was 32.

The total floor space measures 500 sq. ft., or an average of 15.6 sq. ft. per scholar. The total cubic capacity is 7,250 cubic feet, or 226.5 cubic feet per head.

Lighting. The total lighting area measures 120 sq. ft., or about one-fourth the floor space.

The light is from behind, right, and front, and also indirectly through the partition on the left.

Ventilation. The total area of permanent inlet ventilation measures 28 sq. in., or an average of .9 sq. in. per scholar, and consists of three circular window-sill ventilators, 3½in. in diameter, at a height of 4ft. from the floor.

The total area of permanent outlet ventilation measures 144 sq. in., or an average of 4.5 sq. in. per scholar, and consists of two outlets in the roof, 12in. \times 6in. There are five window hoppers, opening 18in. \times 9in.

There is cross ventilation in this room.

Room No. 1.

The average number present during September, 1903, was 38.

The total floor space measures 416 sq. ft., or an average of 10.9 sq. ft. per scholar. The total cubic capacity is 6,041 cubic feet, or 158.9 cubic feet per head.

Lighting. The total lighting area measures 63 sq. ft., or about one-sixth of the floor space.

The light is chiefly from the left, and partly from the front, and also from behind through the glass partition separating this room from No. 2.

Ventilation The total permanent inlet ventilation area measures 27 sq. in., which is equal to .7 sq. in. per scholar, and consists of three circular window-sill ventilators, $3\frac{1}{2}$ in. in diameter, at a height of 4ft. from the floor.

The total permanent outlet ventilation area measures 72 sq. in., or nearly 2 sq. in. per scholar, and consists of an opening in the roof. There are three window hoppers, opening 18in. \times 9in., at a height of 6ft. from the floor.

There is cross ventilation in this room.

There is also a grating in the floor of this room, 3ft. \times 10in., probably an inlet opening; and an opening at floor level, 8in. \times 8in., behind the hot water pipes.

Room No. 4.

The average number present during September, 1903, was 38.

The total floor area measures 419 sq. ft., or an average of about 11 sq. ft. per scholar. The total cubic capacity is 6,080 cubic feet, or 160 cubic feet per head.

Lighting. The total lighting area measures 65 sq. ft., or about one-sixth of the floor space. The light is from the left and above, by means of two windows opening on swivels, 4ft. \times 2ft. each, and 20ft. from the floor.

Ventilation. The total permanent inlet ventilation area measures 162 sq. in., or an average of 4.2 sq. in. per scholar, and consists of two Sherringham valves, 9in. \times 9in.

The total permanent outlet ventilation measures 1,080 sq. in., or an average of 28.4 sq. in. per scholar, and consists of two outlets in the roof, 3ft. \times 1ft. 3in., one of which is boarded over. There are two window hoppers, opening 18in. \times 9in.

There is cross ventilation in this room.

There is a lavatory basin in this room, the waste pipe from which discharges over a gully in the cellar. This lavatory basin is boxed over, and the casing reaches to within 2in. of the floor.

Room No. 5.

The average number present in this room during September, 1903, was 52.

The total floor space measures 610 sq. ft., or an average of 11.7 sq. ft. per scholar. The total cubic capacity is 12,200 cubic feet, or 234.6 cubic feet per head.

Lighting. The total lighting area, which is by means of four skylights, measures 88 sq. ft., or about one-seventh of the floor space. The light is received from above.

Ventilation. The total permanent inlet ventilation area measures 448 sq. in., or an average of 8.6 sq. in. per scholar, and consists of four Sherringham valves (1ft. 2in. \times 8in.), at a height of 5ft. 9in. from the floor. There are two window openings; one opening into room No. 6, and one into room No. 4.

The total permanent outlet ventilation area measures 664 sq. in., or an average of 12.7 sq. in. per scholar, and consists of two outlets in the roof.

There is no cross ventilation.

Room No. 6.

The average number present during September, 1903, was 37.

The total floor space measures 396 sq. ft., or an average of 10.7 sq. ft. per scholar. The total cubic capacity is 5,742 cubic feet, or 155.1 cubic feet per head.

Lighting. The total lighting area measures 65 sq. ft., or about one-sixth of the floor space.

The light is from behind and above.

Ventilation. The total permanent inlet ventilation area measures 81 sq. in., or an average of 2.2 sq. in. per scholar, and consists of one Sherringham valve (9in. \times 9in.), about 7ft. from the floor.

The total permanent outlet ventilation consists of one outlet in ceiling, 3ft. \times 1ft. 3in., or 540 sq. in., or an average of 14.6 sq. in. per scholar.

Also there are two window hoppers, 2ft. 6in. \times 1ft. 6in., 12ft. from the floor, and two swivel windows opposite these, each 2ft. \times 4in., and 20ft. from the floor.

There is, therefore, cross ventilation.

Schoolroom No. 7.

The average number present during September, 1903, was 107.

The total floor space measures 1,800 sq. ft., or an average of 16.8 sq. ft. per scholar. The total cubic capacity is 38,700 cubic feet, or 361.6 cubic feet per head.

Lighting. The total lighting area measures 174 sq. ft., or about one-tenth of the floor space.

The light is from the left and above.

There are four windows, on one side, and two skylights.

Ventilation. There is a grating on the floor, 2ft. 9in. x 10in., over a hot water pipe.

The permanent outlet ventilators measure, collectively, 5,184 sq. in., or an average of 48.4 sq. in. per scholar, and consist of six large openings in the roof.

There is no permanent inlet ventilation.

Four windows are made to open on hinges.

Infants' Classroom No. 10.

The average number present during July, 1903, was 54.

The total floor space measures 500 sq. ft., or an average of 9.2 sq. ft. per scholar. The total cubic capacity is 7,250 cubic feet, or 134.2 cubic feet per head.

Lighting. The total lighting area measures 117 sq. ft., or one-fourth of the floor space.

The light is from the left and behind.

Ventilation. The total permanent inlet ventilation area measures 405 sq. in., or an average of 7.5 sq. in. per scholar, and consists of five Sherringham valves, 9in. x 9in., at a height of 6ft. 6in. from the floor.

The total permanent outlet ventilation consists of two outlets in ceiling, 2ft. 3in. x 1ft. 3in., or 810 sq. in., thus allowing 15.0 sq. in. per scholar. There are three window hoppers (18in. x 9in.), at a height of 7ft. and 12ft. from the floor.

There is cross ventilation.

Infants' Schoolroom No. 9.

The average number present in this room during July, 1903, was 81.

The total floor space measures 1,000 sq. ft., or an average of 12.3 sq. ft. per scholar. The total cubic capacity is 14,500 cubic feet, or 179.0 cubic feet per head.

Lighting. The total lighting area measures 127 sq. ft., or about one-seventh of the floor space.

There are four windows, on one side, and a skylight.

Ventilation. The total permanent inlet ventilation area measures 324 sq. in., or an average of 4 sq. in. per scholar, and consists of four Sherringham valves (9in. x 9in.), at a height of 6ft. 6in. from the floor.

The total permanent outlet ventilation area measures 1,152 sq. in., or an average of 14.2 sq. in. per scholar, and consists of four outlets in the roof.

There is partial cross ventilation.

There are four windows made to open, and there are two window hoppers, opening (18in. x 9in.), at a height of 7ft. from the floor.

Classroom No. 8.

The average number present during July, 1903, was 60.

The total floor space measures 420 sq. ft., or an average of 7.0 sq. ft. per scholar. The total cubic capacity is 6,090 cubic feet, or 101.5 cubic feet per head.

Lighting. The total lighting area measures 92 sq. ft., or about one-fourth of the floor space.

The light is from the left and behind.

Ventilation. The total permanent inlet ventilation area measures 243 sq. in., or 4 sq. in. per scholar, and consists of three Sherringham valves, 9in. square, at a height of 6ft. 6in. from the floor.

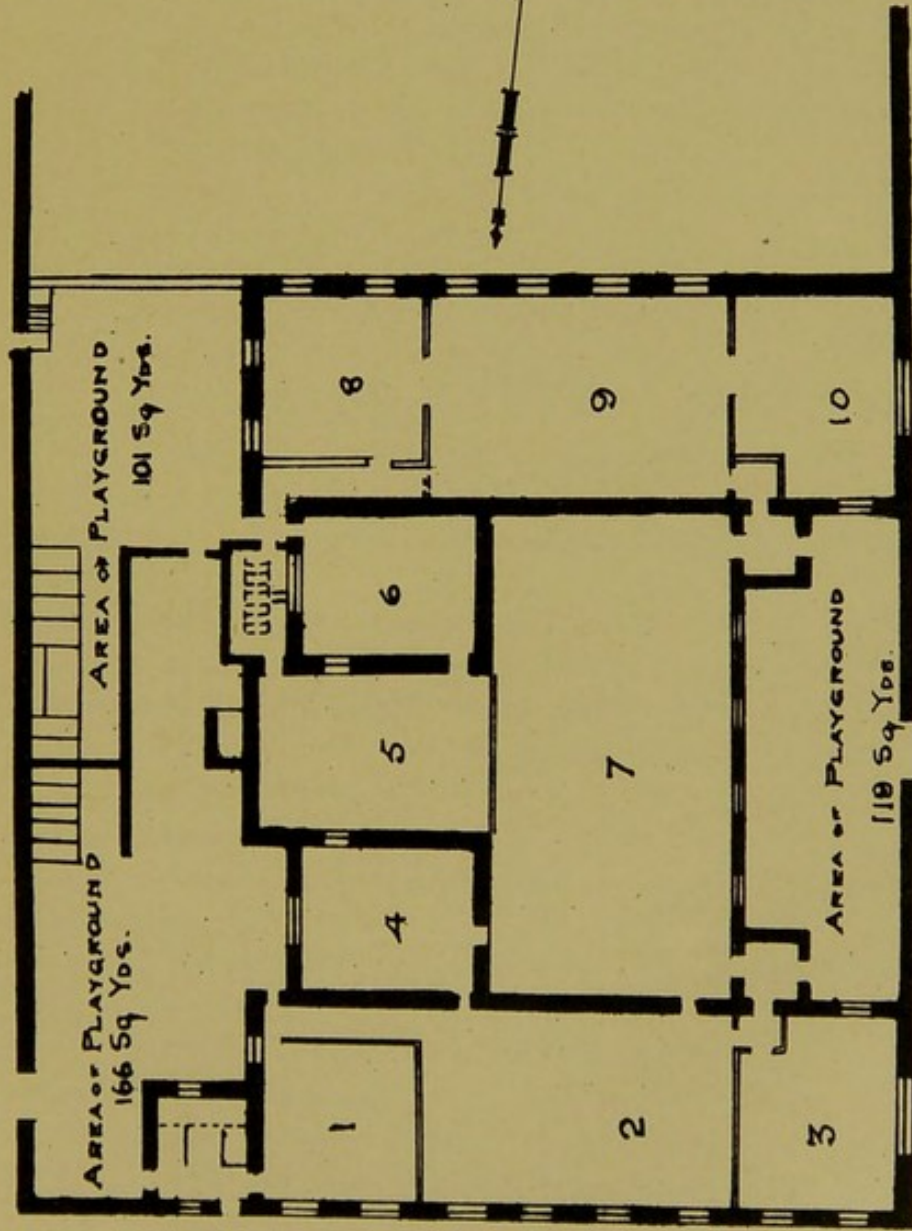
The total permanent outlet ventilation area measures 864 sq. in., or about 14.4 sq. in. per scholar, and consists of two outlets in the roof.

There is cross ventilation.

There are four windows made to open, two of which are window hoppers (opening 18in. x 9in.), at a height of 7ft. from the floor.

Drill Room.

This room is situated on the first floor of the new erection, over the rooms Nos. 1, 2 and 3, and is used by the scholars as a gymnasium.



Room marked	Average height.	Cubic feet.
1	20' 10" x 20' 0" x 14' 6" =	6041
2	40' 0" x 25' 0" x 14' 6" =	14500
3	20' 0" x 25' 0" x 14' 6" =	7250
4	22' 8" x 18' 6" x 14' 6" =	6080
5	30' 6" x 20' 0" x 20' 0" =	12200
6	22' 0" x 18' 0" x 14' 6" =	5742
7	30' 0" x 60' 0" x 21' 6" =	38700
8	21' 0" x 20' 0" x 14' 6" =	6090
9	40' 0" x 25' 0" x 14' 6" =	14500
10	25' 0" x 20' 0" x 14' 6" =	7250
11	13' 3" x 8' 0"	

CAMBRIDGE ST.

— ST. MATTHEW'S SCHOOL —

Scale 30 feet to 1 inch



The floor is boarded, and the walls are boarded to a height of 5ft. and coloured green above.

This room is lighted by one window 10ft. × 6ft. 6in., and a series of skylights, on one side of the roof, measuring, approximately, 40ft. × 5ft.

The inlet ventilation is by means of nine Sherringham valves.

The outlet ventilation is by means of three outlets in the roof.

This room is lighted by electric light.

Recommendations.

- I. To improve the urinal accommodation.
- II. To provide efficient cloak-room accommodation.
- III. To improve the permanent ventilation openings where they are deficient, and provide more window hoppers.
- IV. To fix plain glass in the windows.
- V. To arrange that room No. 8 shall not contain more than 46 scholars.

MAUDSLEY STREET SCHOOL.

This school was erected in 1867, and enlarged in 1873 and 1876. It is a building of brick. There are three rooms for the use of the Sunday school, above the infants' room, which are lighted by skylights.

The walls generally are in need of pointing.

There are two louvred ventilators fixed in the roof of the school; one for the main room and one for the class-room. There is also an iron grating at each gable-end, and an iron grating at the gable end of the infants' school.

Playgrounds.

There are two playgrounds, which are flagged. No portion is under cover.

The playground for the boys measures 151 sq. yds., and is separated by iron railings from the infants' playground.

The girls and infants' playground measures 112 sq. yds.

Sanitary Conveniences.

The sanitary conveniences are of the earthenware tippler type. There are four compartments, and a stone urinal for boys (10 linear

feet), and five compartments for girls and infants. The conveniences are flushed three times a day, and are situated about 15ft. from the school.

Dry Refuse.

The dry refuse is stored in a brick ashpit adjoining the conveniences. The passage in front is open at the top.

A portion of the chapel wall forms one side of the passage in front of the conveniences, and this passage is used by the scholars as a urinal.

Walls.

The surface of the internal walls is plastered, coloured a greenish-blue, and boarded in some of the rooms to a height of 4ft. from the floor.

Floors.

The floors are boarded (and as they were much out of repair, have been renewed recently).

The floors are swept daily, and washed three times a year. The desks are washed once a month.

Heating.

The heating of the rooms is by means of hot water pipes and radiators. In the babies' class-room there is also an open fire-place, provided with a guard.

The glass in the windows is partly plain and partly semi-transparent and all the skylights have frosted glass.

The artificial light is gas.

The partition between the infants' school-room and infants' class-room is of wood and glass.

Cloak-Rooms.

There are three cloak-rooms; one for infants and two for the mixed scholars.

The infants' cloakroom is situated near the entrance of the infants' schoolroom, from which is separated by a wooden and glass partition.

The floor is boarded, and the walls are boarded to a height of 4ft. from the floor.

This room is heated by hot water pipes, and lighted by a window, 5ft. 4in. \times 3ft., which will open on a swivel.

There is one Sherringham valve inlet ventilator, measuring 10in. \times 7in.

There are 120 pegs fixed on the walls and two racks.

The cloak-room for the scholars of the large schoolroom is situated near the main entrance, and is lighted by two windows, 5ft. 8in. \times 3ft. 4in., which will open.

There are two outlet ventilators, 6in. \times 3in., fixed near the ceiling.

The walls are boarded to a height of 3ft. from the floor, which is boarded also.

This room is heated by hot water pipes.

There are 185 pegs, arranged on the walls and on racks.

The wall near the door is very damp, and the ceiling needs repairing.

The cloak-room for scholars in class-room No. 2 is situated near the entrance to that room, and is lighted by a skylight, 4ft. \times 3ft., and a small triangular window in the wall, 12in. \times 11in., under the staircase.

This room is heated by a radiator.

There are 84 pegs, arranged on the wall and on a rack.

There is a small room adjoining this cloak-room for the use of the teachers.

Lavatory Accommodation.

The lavatory accommodation for the mixed department is near the back entrance of the school, and consists of a large slop-store.

This room is lighted by a window 4ft. \times 3ft. 6in.

The floor is flagged, and is very uneven, and the walls are pink-washed.

Adjoining this lavatory there is a pedestal wash-down w.c., for the use of the teachers, with a window 4ft. \times 1ft. 8in., opening 1ft. \times 1ft. 8in.

The lavatory accommodation for the infants consists of one enamelled basin fixed in the infants' class-room, the waste pipe from which appears to be directly connected to the drain.

MIXED DEPARTMENT.

The mixed department consists of one large room, and class-room No. 2.

There are also two rooms on the first floor for the use of the Sunday school, which are used at various times by the day scholars. These two rooms, in the report are numbered 5 and 6, and the calculations are made on the numbers generally using them.

Large Schoolroom, Nos. 1a, 1b, and 1c.

The average number present during September, 1903, was 191.6.

The total floor space measures 2,357 sq. ft., or an average of 12.3 sq. ft. per scholar. The total cubic capacity is 40,079 cubic feet, or 209.2 cubic feet per head.

Lighting. The total lighting area measures 258 sq. ft., or about one-ninth of the floor space. The light is received from all sides, and from the roof, by means of skylights

Ventilation. There are seven windows with Sherringham hoppers; four on one side and three on the other, opening 4ft. x 9in.

There are no permanent inlet ventilators.

The outlet ventilation is by means of six outlets in the ceiling (two 3ft. x 1ft., and four 2ft. x 2ft.), giving an area of 3,168 sq. in., or an average of 16.5 sq. in. per scholar.

There is cross ventilation when the Sherringham window hoppers are open.

During April, the floors of the school were renewed, and room No. 1 was divided into three smaller rooms by sliding doors of wood and glass and reaching from floor to ceiling.

Room No. 2.

The average number present during September, 1903, was 107.3.

The total floor space measures 1,772 sq. ft., or an average of 16.5 sq. ft. per scholar. The total cubic capacity is 30,128, or 280.7 cubic feet per head.

Lighting. The total lighting area measures 274 sq. ft., or about one-sixth of the floor space. The light is from the left, right, and above by means of skylights.

Ventilation. There are seven windows made to open on hinges at their upper parts.

The inlet ventilation is by means of a Tobin's tube (wood) through which the hot water pipes are carried, and having an area of 2ft. 8in. x 4½in., or 144 sq. in., or an average of 1.3 sq. in. per scholar.

The outlet ventilation is by means of six outlets in the ceiling, three 3ft. x 1ft. 3in., and three 12in. x 12in., giving an area of 2,052 sq. in., or an average of 19.1 sq. in. per scholar.

There is no cross ventilation.

INFANTS' DEPARTMENT.—Room No. 3.

The average number present in this room during July, 1903, was 98.

The total floor space measures 1,130.8 sq. ft., or an average of 11.5 sq. ft. per scholar. The total cubic capacity is 13,003 cubic feet, or 132.6 cubic feet per head.

Lighting. The total lighting area measures 146 sq. ft., which is nearly one-eighth of the floor space.

The light is received from the left and behind.

Ventilation. There are two Sherringham window hoppers, opening 4ft. x 9in., at a height of 12ft. from the floor, and also four other windows opening on swivels at their upper portions.

The permanent inlet ventilation is by means of five Sherringham valves, 9in. x 6in., giving an area of 270 sq. in., or an average of 2.7 sq. in. per scholar.

The outlet ventilation is by means of four openings, 9in. x 4in., in the ceiling, in which are fixed boards on a swivel, giving an outlet area of 144 sq. in., or an average of 1.4 sq. in. per scholar.

There is no cross ventilation.

Room No. 4.

The average number present in this room during July, 1903, was 48.

The total floor space is 498 sq. ft., or an average of 10.3 sq. ft. per scholar. The total cubic capacity is 7,475 cubic feet, or 155.7 cubic feet per head.

Lighting. The total lighting area measures 43 sq. ft., or about one-eleventh of the floor space.

The light is from the left and from the roof.

Ventilation. The permanent inlet ventilation is by means of three Sherringham valves, 9in. x 6in., fixed about 9ft. from the floor, having an area of 162 sq. in., or an average of 3.3 sq. in. per scholar.

There is one open fire-place, with a guard.

There is no cross ventilation.

There is a white enamelled lavatory basin in this room.

Rooms 5 and 6 are used by scholars from the mixed department, and are situated on the first floor, and are lighted by skylights only.

Room No. 5.

The average number present in this room during September, 1903, was 60.

The total floor space measures 428 sq. ft., or an average of 7.1 sq. ft. per scholar.

Lighting. The total lighting area measures 48 sq. ft., or about one-ninth the floor space, and is from above.

Ventilation. The inlet ventilation is by means of four Sherringham valves, 9in. x 6in., having an area of 216 sq. in., or an average of 3.6 sq. in. per scholar.

There is no outlet ventilation.

Room No. 6.

The average number present in this room during September, 1903, was 20.

The total floor space measures 300 sq. ft., or an average of 15 sq. feet per scholar.

Lighting. The total lighting area measures 32 sq. ft., or about one-ninth the floor space.

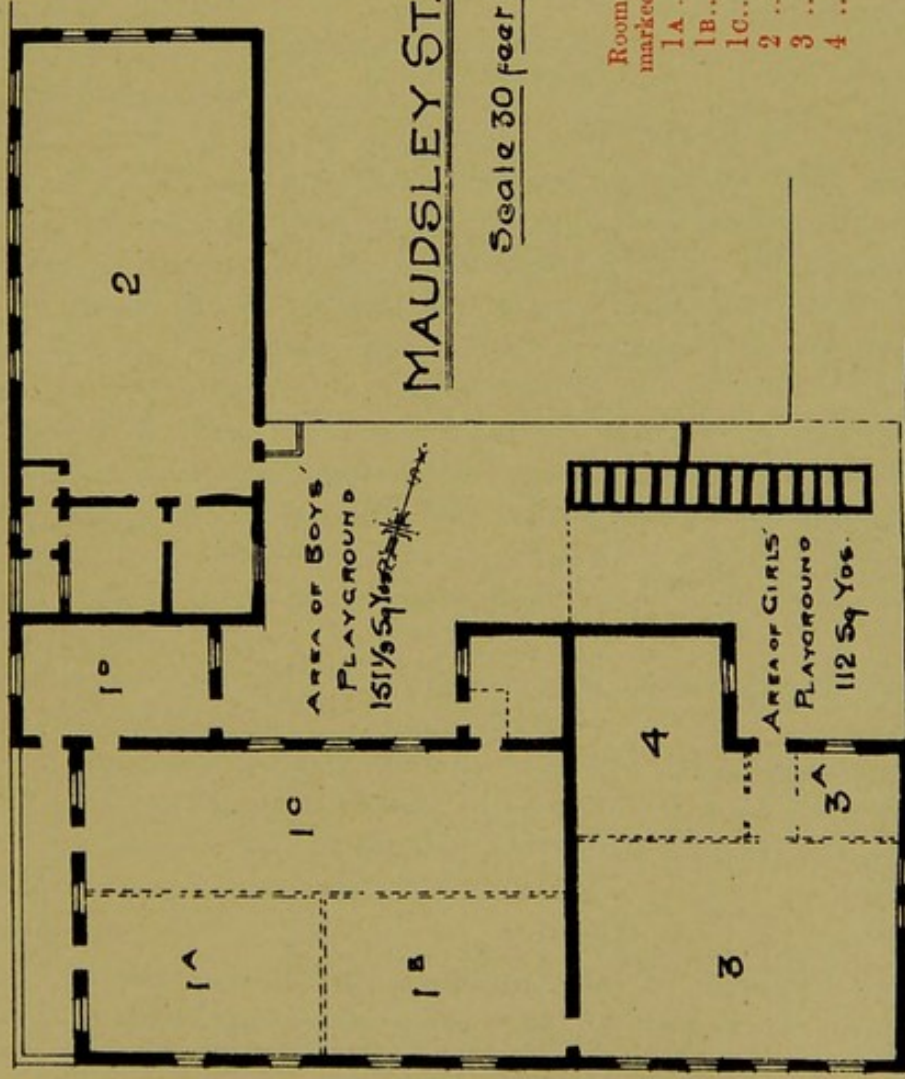
The light is from above.

Ventilation. The inlet ventilation is by means of two Sherringham valves, 9in. x 6in., having an area of 108 sq. in., or an average of 5.4 sq. in. per scholar.

There is no outlet ventilation.

Recommendations.

- I. To improve the inlet and outlet ventilation openings where they are defective.
- II. To improve the cloak-room accommodation.
- III. To avoid the use of rooms 5 and 6.



MAUDSLEY ST. SCHOOL

Scale 30 feet to 1 inch

Room marked	Dimensions	Average height.	Cubic feet.
1A	30' 3" x 20'	17' 0"	10454
1B	30' 0" x 20'	17' 0"	10368
1C	60' 2" x 18'	17' 0"	19257
2	58' 9" x 30'	17' 0"	30128
3	40' 9" x 27'	11' 6"	13003
4	26' 7" x 18'	15' 0"	7475

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ST. JOSEPH'S SCHOOLS.

The school for the boys is separate from the girls' and infants'. They are situated in Cumberland Street and Mary Street.

The girls' and infants' school was erected in 1878, and the boys' school in 1896. Both schools are brick, and in good condition.

Playgrounds.

The boys' playground measures 173 sq. yds., and the surface is asphalted, but is not in good repair.

The girls' and infants' playground measures 164½ sq. yds., and the surface is flagged.

The boys' and girls' playgrounds are completely separated from each other.

The girls' and infants' playground is insufficient.

Sanitary Conveniences.

The type of the sanitary conveniences is Merrill's trough. There are three for the boys and one for the teachers, situated in the boys' ground, adjoining the gable-end of No. 23 William Jackson Street. They are about 5yds. from the nearest school window. The compartments measure 3ft. 4in. to seat-board, and 1ft. 11in. wide. There is a passage 2ft. 7in. wide in front. The floor surface is flagged, and slopes towards the surface of the playground.

There are 12 linear feet of urinals adjoining the boys' conveniences. The back and sides are constructed of stone, the floor-surface flagged, and a channel has been formed leading to a properly trapped gully.

There are five compartments for the girls and infants, of the same construction as those for the boys. They are situated about 10ft. from the school windows.

The sanitary conveniences are flushed three times a day by automatic cisterns.

They are ventilated by the doors being left short at the top.

There is a pan closet at the foot of the staircase. It is lighted by a window 3ft. x 2ft. 6in., which at one time opened, but has now been nailed up.

Drainage.

The drainage appears to be in working order. The drainage from the w.c.'s discharges through traps. The downspouts are directly connected to the drains.

Refuse.

There is a large ash-pit adjoining the girls' sanitary conveniences, measuring 8ft. x 3ft. x 6ft., or 144 cubic feet. It is partly covered, and this allows water to lodge on the surface. The ash-pit is emptied when there is about a load. The refuse is emptied in William Jackson Street.

Cloak-Rooms.

The boys' cloak-room is situated beneath the staircase of the Men's Club, and its entrance is in Cumberland Street. It is large and is lighted by one window, 5ft. x 3ft. 6in., 1ft. 6in. x 9in. of which will open on swivel. The floor is tiled.

There are 74 pegs placed against the wall.

Infants' Cloak-Room.

Some clothes are placed in a passage at the foot of the staircase. The infants' proper cloak-room is a recess in the girls' school. It is partitioned off to a height of about 7ft., and consequently the cloak-room ventilates into the girls' school.

There are 97 pegs on racks and walls.

It is lighted by the windows in the recess, which light the girls' class-room.

This cloak-room obstructs light to the girls' class-room, and is itself not well lighted.

Girls' Cloak-Room.

This cloak-room is situated at the furthest end of the school, and the girls have to pass through the school after obtaining their clothes.

This cloak-room is lighted by two windows, 4ft. 6in. x 2ft., and one 2ft. 6in. x 2ft. 6in.

The walls are constructed of brick, and there are 136 hooks placed on racks and walls. No means are provided for warming this room. Clothes also are placed against a wall in the passage.

Heating.

The heating is carried out by means of hot water pipes placed round the rooms.

Walls.

The walls in the boys' school are boarded to a height of 4ft. from the ground; above this height they are plastered, and painted a pale green colour. The walls in the girls' and infants' school are cemented to a height of 4ft. 6in., and above this height they are plastered, and painted a light brown colour.

There is evidence of dampness in Class-room No. 1 in the boys' school.

Floors.

The floors in the boys' school are constructed of rectangular blocks, and the floors in the girls' and infants' are constructed of tongued and grooved boards, with a cavity underneath.

They are swept every night, and cleansed twice a year.

Lavatory Accommodation.

There is one enamelled lavatory basin in the boys' cloak-room; the waste pipe is untrapped, and discharges over gully.

There is an enamelled wash-basin where the pan closet is, situated at the foot of a staircase in the girls' school. The waste pipe is trapped, and discharges over a gully.

BOYS' SCHOOL.

There are three class-rooms in this school.

Room No. 1.

This is the boys' large room, measuring 55ft. 6in. \times 32ft. 0in., or 1,776 sq. ft., and the average number of boys present during September, 1903, was 164, thus allowing 10.8 sq. ft. of floor space per head. The total cubic capacity is 42,544 cubic feet, or 259.4 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, 1ft. 4in. \times 8in., at a height of 6ft. from the floor; 11 windows opening on swivels; ten 3ft. 2in. \times 1ft. 5in., and one 2ft. \times 1ft., near the ceiling; four Tobin's tubes, 9in. \times 3in., 6ft. from the floor, and one outlet in the ceiling, 3ft. \times 3ft., leading to revolving cowls on the roof.

The permanent inlet ventilation consists of the four Tobin's tubes, or 108 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of the outlet in the ceiling, or 1,296 sq. in., thus allowing 7.9 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 490 sq. ft., which is equal to between one-third and one-fourth of the floor space.

The light is from back and front.

There are 24 gas jets.

Room No. 2.

This is the boys' class-room, measuring 22ft. 6in. \times 22ft. 0in., or 495 sq. ft., and the average number of boys present during September, 1903, was 52, thus allowing 9.5 sq. ft. of floor space per head. The total cubic capacity is 6,930 cubic feet, or 133.2 cubic feet per head.

The ceiling in this room is defective.

Ventilation. The ventilation consists of one hopper window, 1ft. 7in. \times 8in., at 8ft. from the floor; three windows, 2ft. \times 1ft., opening on swivels at the top; one, 3ft. 0in. \times 1ft. 5in.; three Tobin's tubes, 9in. \times 3in., and one grating in the wall near ceiling, 1ft. 6in. \times 10in.

The permanent inlet ventilation consists of three Tobin's tubes, or 81 sq. in., thus allowing 1.5 sq. in. per head.

The permanent outlet ventilation consists of one grating near the ceiling leading to revolving cowl on roof, or 180 sq. in., thus allowing 3.4 sq. in. per head.

Lighting. The total lighting area is 86 sq. ft., which is equal to between one-fifth and one-sixth of the floor space.

The light is from right and behind.

There are four gas jets.

Room No. 3.

This is the boys' class-room, measuring 22ft. 6in. \times 22ft., or 495 sq. ft., and the average number of boys present during September, 1903, was 54, thus allowing 9.1 sq. ft. of floor space per head. The total cubic capacity is 6,930 cubic feet, or 128.6 cubic feet per head.

Ventilation. The ventilation consists of one hopper window, 1ft. 7in. \times 8in., 6ft. from the floor; two windows, 2ft. \times 1ft.; one 3ft. 0in. \times 1ft. 5in., opening on swivels; three Tobin's tubes, 9in. \times 3in., and one grating in wall near the ceiling, 1ft. 6in. \times 10in.

The permanent inlet ventilation consists of three Tobin's tubes, or 81 sq. in., thus allowing 1.5 sq. in. per head.

The permanent outlet ventilation consists of one grating in wall, near the ceiling, leading to revolving cowl on roof, or 180 sq. in., thus allowing 3.3 sq. in. per head.

Lighting. The total lighting area is 86 sq. ft., which is equal to between one-fifth and one-sixth of the floor space.

The light is from left and behind.

There are four gas jets.

The lower panes of glass throughout the boys' school are semi-transparent.

INFANTS' DEPARTMENT.

There are two rooms in the infants' department.

Room No. 8.

This room measures 35ft. x 27ft. 6in., or 962 sq. ft., and the average number of infants present during June, 1903, was 123, thus allowing 7.8 sq. ft. of floor space per head. The total cubic capacity is 14,437 cubic feet, or 117.3 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 4ft. x 1ft.; twelve windows opening on hinges at the upper parts, 2ft. x 1ft.; four box tubes, 7in. x 9in. (one in each corner of the room), and two gratings in outside wall, 6in. x 6in., near the ceiling.

The permanent inlet ventilation consists of four box tubes, 7in. x 9in., or 252 sq. in., thus allowing 2 sq. in. per head.

The permanent outlet ventilation consists of two gratings in outer wall, 6in. x 6in., or 72 sq. in., thus allowing .5 sq. in. per head.

Lighting. The total lighting area is 167 sq. ft., which is equal to one-fifth of the floor space.

The light for one class is received from the left, behind, and front, and for three classes from the right and behind.

There are 10 gas jets.

Of the 167 sq. ft. of glass, 132 sq. ft. are semi-transparent glass.

Room No. 7.

This is an infant's class-room, measuring 44ft. x 18ft., or 792 sq. ft., and the average number of infants present during June, 1903, was 70, thus allowing 11.3 sq. in. per head. The total cubic capacity is 11,880 cubic feet, or 169.7 cubic feet per head.

Ventilation. The ventilation consists of one window, opening 2ft. 9in. x 1ft. 0in.

There is no permanent ventilation.

Lighting. The total lighting area of this room is 69 sq. ft., which is equal to one-eleventh of the floor space.

The light is not good. There are two windows of dull thick glass on one side of the room. On the other side of the room there is a window of dull thick glass over the door.

The light is received from behind.

GIRLS' SCHOOL.

This school is on the same level as the infants' school, and is entered from the infants' class-room.

Room No. 6.

This room measures 1,622 sq. ft., and the average number of girls present during the month of September, 1903, was 99 thus allowing 16.3 sq. ft. of floor space per head. The total cubic capacity is 25,960 cubic feet, or 262.2 cubic feet per head.

Ventilation. The ventilation consists of one hopper window, 2ft. 6in. \times 6in., 6ft. from floor, and four windows, 1ft. 6in. \times 1ft. 6in., opening on hinges.

There is no permanent ventilation.

Lighting. The total lighting area is 190 sq. ft., which is equal to one-eighth of the floor space.

The light is from behind.

There are 11 naked lights.

This room is not well lighted, the windows being placed in the recesses at each end of the room. One of the windows lights the cloak-room which obstructs the light at one corner of this class-room; four windows are placed in the sides of the recess, and practically only light the recess.

The room is long and narrow.

Room No. 5.

This is the girls' large room, measuring 50ft. \times 44ft., or 2,200 sq. ft., and the average number of girls present during September, 1903, was 127, thus allowing 17.3 sq. ft. of floor space per head. The total cubic capacity is 35,200 cubic feet, or 277.1 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, 2ft. 6in. \times 6in., 6ft. from floor, and eight window openings, 2ft. 9in. \times 1ft. 6in., at top of windows.

There is no permanent ventilation.

The ventilation is cross.

Lighting. The total lighting area is 345 sq. ft., which is equal to one-sixth of the floor space.

The light is from behind and in front.

There are 12 gas jets. This room is well lighted.

Room marked	Average height.	Cubic feet.
1.....	55' 6" x 32' 0" x 27' 0"	= 42544
(Projecting Room deducted from cubic capacity).		
2.....	22' 6" x 22' 0" x 14' 0"	= 6930
3.....	22' 6" x 22' 0" x 14' 0"	= 6930
4.....	44' 0" x 23' 0" x 12' 3"	= 12397

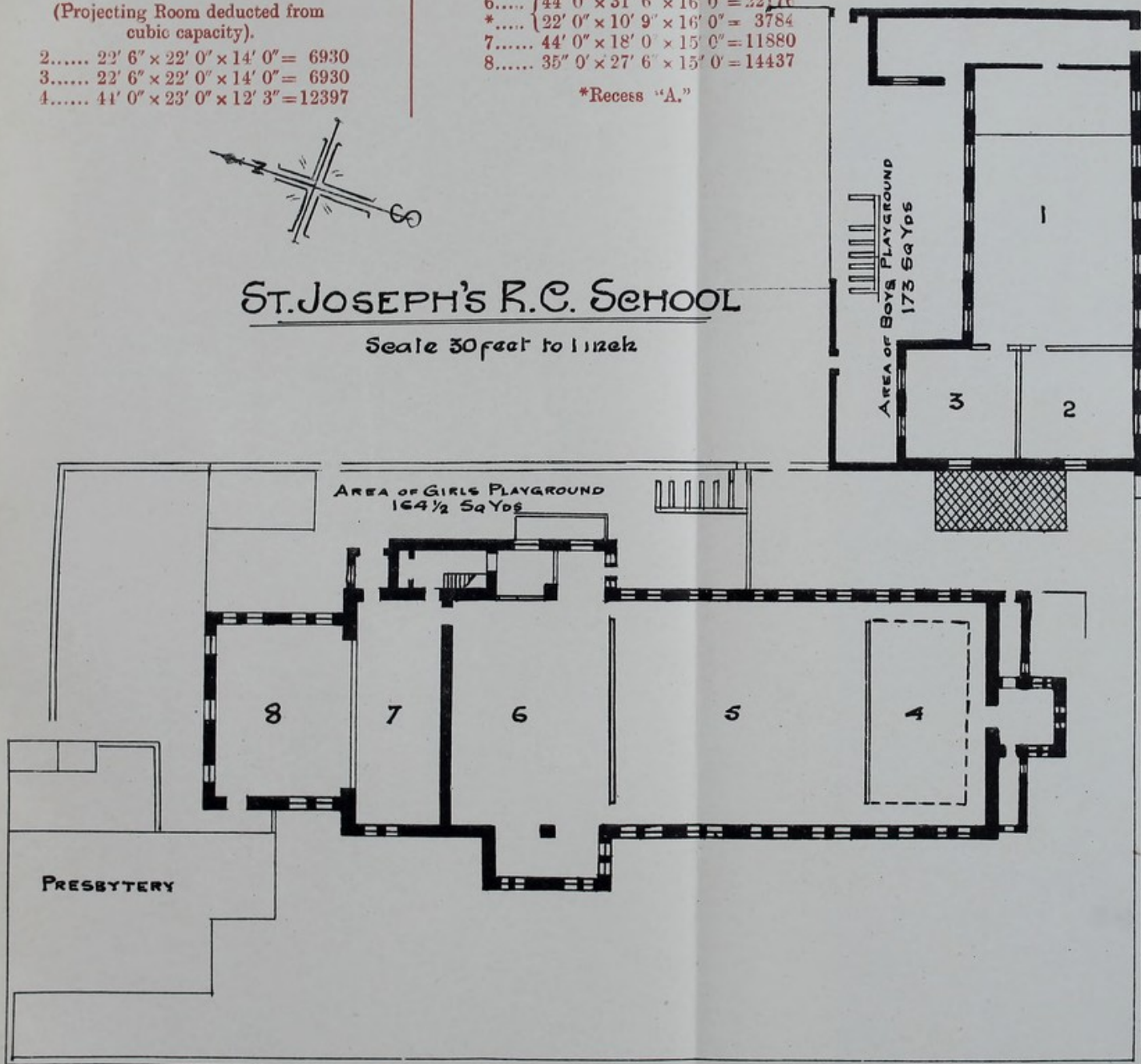
Room marked	Average height.	Cubic feet.
5... ..	50' 0" x 44' 0" x 16' 0"	= 35200
6.....	44' 0" x 31' 6" x 16' 0"	= 22176
*.....	22' 0" x 10' 9" x 16' 0"	= 3784
7.....	44' 0" x 18' 0" x 15' 0"	= 11880
8.....	35' 0" x 27' 6" x 15' 0"	= 14437

*Recess "A."



ST. JOSEPH'S R.C. SCHOOL

Scale 30 feet to 1 inch



MARY STREET



Room No. 4.

This room is practically a platform, with a passage down the sides. It measures 44ft. 0in. \times 23ft., or 1,012 sq. ft., and the average number of girls present during September, 1903, was 46, thus allowing 22 sq. ft. of floor space per head. The total cubic capacity is 12,397 cubic feet, or 269.5 cubic feet per head.

Ventilation. The ventilation consists of one hopper window, 2ft. 9in. \times 6in., 6ft. from floor, and four windows opening 2ft. 6in. \times 1ft. 6in.

There is no permanent ventilation.

There is cross ventilation.

Lighting. The total lighting area is 172 sq. ft., which is equal to almost one-sixth of the floor space.

The light is from left and right.

There are six gas jets.

The girls' rooms are divided from each other by glazed slides.

Recommendations.

- I. To repair the boys' playground. More playground accommodation for the girls and infants would be an advantage.
- II. To improve the ashpit accommodation.
- III. To provide more efficient cloak-room accommodation.
- IV. To improve the ventilation openings where they are defective.
- V. To provide better light in Rooms 6 and 7.
- VI. To remove the pan closet in the girls' school.
- VII. To arrange that Rooms 2, 3 and 8 shall not contain at one time more than 49, 49, and 106 scholars respectively.

WENSLEY FOLD NATIONAL SCHOOL.

The mixed school was erected in 1845, and is a stone building, in fair repair.

The infants' school was built in 1893, and is a good stone building. Both schools are situated in Apple Street.

The ceiling in two rooms is out of repair, and the roof requires over-hauling.

Playgrounds.

There are two playgrounds; one for the boys and one for the girls.

The area of the boys' playground is 470 sq. yds., and the girls' 380 sq. yds.

Both playgrounds are well flagged, slope towards the school, and gullies have been provided to take away surface water. Both playgrounds are bounded by a rubble wall, 8ft. high, and a rubble wall divides the boys' from the girls', but access can be gained from one to the other by a door.

Sanitary Conveniences.

The sanitary conveniences consist of brown salt-glazed troughs, with plug, and one pedestal closet for the older boys, with a separate cistern. These conveniences adjoin the girls' cloak-room, and are 2yds. from the nearest window.

There are two compartments for the girls, and one for the teachers, and three conveniences for the infants (in one compartment, with no division walls) in one series, and four compartments for the boys. Each compartment measures, 4ft. to the seatboard, and 2ft. 10in. wide (excepting that for the infants, which measures 6ft. 3in. wide). There is a passage in front of the compartments 4ft. 6in. wide, not open to external air above.

The face wall is used as a urinal. There are 12 linear feet of urinals for the older boys, and 13 linear feet of urinals for the infant boys. The backs of the urinals are constructed of salt-glazed bricks, the floors are concreted, and a channel has been formed, leading to a properly trapped gully.

Round the back of the older boys' urinals is a perforated pipe for flushing. The urinals for the infant boys are flushed by hand. The boys have three compartments on the trough system, and one pedestal, with a syphon cistern. These compartments are constructed on the same principle as those for the girls.

There are six windows in the roof of each series of conveniences (2ft. x 1ft.).

The sanitary conveniences are flushed once a day.

Drainage.

The drainage appears to be satisfactory.

Refuse.

There is a properly covered dry ash-pit, constructed against the boundary walls behind Apple Street. It measures 3ft. 6in. x 3ft. 6in. x 3ft. 6in., and has a cubical capacity of 43 cubic feet.

Cloak-Rooms.

There is no special cloak-room for the boys.

The girls' cloak-room, No. 1, measures 16ft. 6in. x 16ft.

It is lighted by two windows, 6ft. x 3ft. each, two panes of which open for ventilation, 3ft. x 1ft. 9in. each.

There are 196 pegs provided on racks in centre of floor.

The room is warmed by hot water pipes, and there is also an open fireplace, and a perforated grid in the division wall of the cloak-room and class-room, 2ft. x 1ft., which ventilates from one room to the other.

Infants' Cloak-room.

The infants' cloak-room communicates with three class-rooms, 3, 5 and 6. It measures 18ft. 8in. x 12ft., and is lighted by four windows in roof, 2ft. 6in. x 1ft. 0in. each.

There are 120 hooks placed on racks in the centre of floor.

The room is warmed by hot water pipes.

The cloak-room is ventilated by an opening in ceiling, over a gas bracket, 4ft. x 4ft.

Lavatory Accommodation.

There are two lavatories in one compartment, adjoining the girls' conveniences, and one in another compartment adjoining boys' conveniences. The lavatory waste pipes are trapped, and discharge over gullies inside.

There is also a lavatory in the infants' cloak-room, and a slop-stone in girls' cloak-room.

The waste pipe is not trapped, but discharges over gully in the yard.

Heating.

The heating of the school is effected by hot water pipes placed round the rooms.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept every night, and washed three times a year.

Walls.

The walls of the mixed school are boarded to a height of 5ft. from the floor, and in the infants' room the walls are boarded up to a height of 3ft. 6in., except on one side of the babies room, which is boarded 7ft. 0in. high. Above these heights the walls are painted a pea-green colour.

There are six rooms in this school used for teaching—Nos. 2, 6, 7 and 8 are used for the mixed scholars, and Nos. 3 and 5 for the infants.

Room No. 2

Measures 24ft. 6in. \times 16ft. 6in., or 404 sq. ft. The average number of children present during September, 1903, was 44, thus allowing 9.1 sq. ft. of floor space per head. The total cubic capacity is 4,648 cubic feet, or 105.6 cubic feet per head.

Ventilation The ventilation of this room consists of two hopper windows, 4ft. 6in. from floor, 3ft. \times 6in.; two window panes, opening on hinges at the top; two openings in the ceiling 1ft. \times 1ft.; one perforated grating in window-sill, 2ft. 6in. from the floor, 8in. \times 4½in., and one perforated grating in the division wall between this room and the cloak-room, 2ft. \times 1ft. During April a new sky-light has been placed in this room, 11ft. \times 2ft. 6in., of which 2ft. \times 2ft. 6in. will open.

The total permanent inlet ventilation consists of one perforated grating in a window-sill, 8in. \times 4½in., or 36 sq. in., thus allowing almost .8 sq. in. per head.

The permanent outlet ventilation consists of two openings in the ceiling, or 288 sq. in., and outlet grating in division wall, or 288 sq. in.

The total area of the permanent outlet ventilation is 576 sq. in., thus allowing 13 sq. in. per head.

There is also an open fire-grate, provided with a fire-guard.

Lighting. The total lighting area of this room is about 45 sq. ft., which is one-ninth of the floor space, in addition to the new window mentioned above.

The light is from the left, and above through skylight.

The lower panes of the windows consist of frosted glass.

Room No. 8

Is the large mixed room, and measures, 41ft. \times 28ft. 10in., or 1,182 sq. ft. The average number of children present during September, 1903, was 116, thus allowing 10.1 sq. ft., of floor space per head. The total cubic capacity is 22,461 cubic feet, or 193.5 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, 2ft. 6in. \times 6in., 6ft. from the floor; four window panes, 1ft. 6in. \times 1ft. 0in., opening on swivels at the top; and one opening on hinges, 2ft. 3in. \times 1ft. 3in.; three perforated gratings in window-sills, 8in. \times 4 $\frac{1}{2}$ in., and three openings in the ceiling, about 12in. square.

The permanent inlet ventilation consists of three perforated gratings in window-sills, 8in. \times 4 $\frac{1}{2}$ in., or 108 sq. in., thus allowing .9 sq. in. per head.

The permanent outlet ventilation consists of three openings in the ceiling, or 432 sq. in., thus allowing 3.7 sq. in. per head.

Glazed slides separate this room from Room No. 7. Some of the panes in these slides open, which allow air to pass from one room to the other.

Lighting. The lighting consists of five side windows, having an area of 157 $\frac{1}{2}$ sq. ft., and 15 panes in skylights in the roof having an area of 60 sq. ft.—total 217 $\frac{1}{2}$ sq. ft., this being equal to nearly one-sixth of the floor space.

The direction of the light is from the right, behind, and front, and also from above through the skylights.

The glass is not transparent.

There are 16 incandescent lights, and two naked lights for artificial lighting.

Room No. 7

Is separated from No. 8 Room by glazed slides. It measures 29ft. 3in. \times 21ft. 9in., or 636 sq. ft. The average number of children present during September, 1903, was 68, thus allowing 9.3 sq. ft. of floor space per head. The total cubic capacity is 12,087 cubic feet, or 177.7 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows opening 2ft. 6in. \times 6in., 6ft. from the floor; two windows opening on swivels at the top, 1ft. 6in. \times 1ft. 0in.; two outlets in the ceiling, about 144 sq. in. each; and three perforated gratings in window-sills, 8in. \times 4 $\frac{1}{2}$ in.

The permanent inlet ventilation consists of three perforated gratings in window-sills, or 108 sq. in., thus allowing 1.6 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the ceiling, or 288 sq. in., thus allowing 4.2 sq. in. per head.

Lighting. The total lighting area of this room is 102 sq. ft., which is equal to one-sixth of the floor space.

The direction of the light is from the left, right, and above (through a skylight).

Room No. 6

Measures 29ft. 3in. \times 20ft. 6in., or 599 sq. ft. The average number of children present during September, 1903, was 62, thus allowing 9.6 sq. ft. of floor space per head. The total cubic capacity is 11,394 cubic feet, or 183.7 cubic feet per head.

Ventilation. The ventilation consists of three hopper windows, 2ft. 6in. \times 6in., 6ft. from floor; two window panes, 2ft. 6in. \times 1ft. 9in., opening on hinges, at the upper parts; one outlet in ceiling, 1ft. \times 1ft.; one grating in window-sill, 8in. \times 4 $\frac{1}{2}$ in., and one open fire-grate, with a guard.

The permanent inlet ventilation consists of one perforated grating in a window-sill, or 36 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in ceiling, or 144 sq. in., thus allowing 2.3 sq. in. per head.

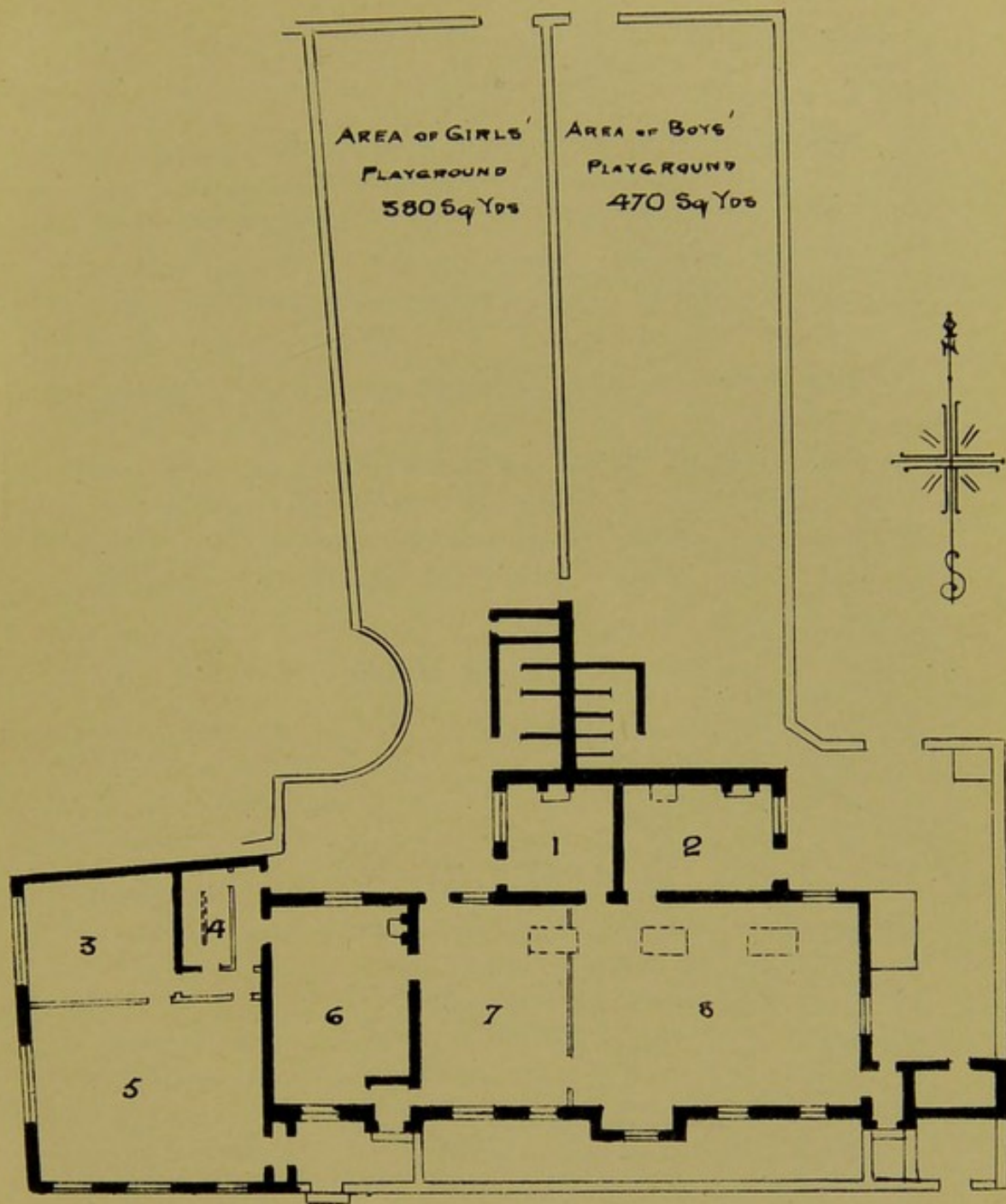
Lighting. The total lighting area is 82 sq. ft., which is nearly one-seventh of the floor space.

The direction of the light is from left and right.

Room No. 5

Is used for the infants, and measures 34ft. 9in. \times 26ft., or 903 sq. ft. The average number of children present during June, 1903, was 95, thus allowing 9.5 sq. ft. of floor space per head. The total cubic capacity is 12,196 cubic feet, or 128.3 cubic feet per head.

Ventilation. The ventilation consists of nine hopper windows, 1ft. 8in. \times 8in., 6ft. from the floor; two windows opening on hinges (one 2ft. 3in. \times 2ft., and one 1ft. \times 1ft., at the upper parts); two perforated gratings in window-sills, 8in. \times 4 $\frac{1}{2}$ in.; three outlets in ceiling, about 4ft. sq., over the gas pendants; one triangular opening in roof, 12in., and three Sherringham valves in the walls, 6ft. from floor, and measuring 9in. \times 6in. each.



WENSLEY FOLD SCHOOL

Scale 30 feet to 1 inch

Room marked.		Average height.	Cubic feet.
1	16' 6" x 16' 0"		
2	24' 6" x 16' 6"	11' 6"	= 4648
3	22' 6" x 18' 0"	13' 6"	= 5467
4	18' 8" x 12' 0"		
5	34' 9" x 26' 0"	13' 6"	= 12196
6	29' 3" x 20' 6"	19' 0"	= 11394
7	29' 3" x 21' 9"	19' 0"	= 12087
8	41' 0" x 28' 10"	19' 0"	= 22461



The permanent inlet ventilation consists of two perforated gratings in window-sills, and the Sherringham valves. The total area of permanent inlet ventilation is 234 sq. in., or nearly 2.4 sq. in. per head.

The permanent outlet ventilation consists of the four outlets in the ceiling. The total area of permanent outlet ventilation is 6,984 sq. in., or 73.5 sq. in. per head.

Lighting. The total lighting area is 145 sq. ft., which is equal to one-sixth of the floor space.

The light for one class is received from the left and behind, and for the other class from the right and behind.

The lower panes in the infants' school are thick and semi-transparent. The remaining glass is transparent.

Room No. 3.

This room is used by the babies, and measures 22ft. 6in. \times 18ft. 0in., or 405 sq. ft. The average number present during June, 1903, was 40, thus allowing 10.1 sq. ft. of floor space per head. The total cubic capacity is 5,467 cubic feet, or 136.6 cubic feet per head.

Ventilation. Consists of two hopper windows, 1ft. 8in. \times 8in., opening, 6ft. from the floor; one window, 2ft. 3in. \times 1ft. 11in., opening at the top on hinges; two Sherringham valves in walls, 9in. \times 6in., 6ft. from floor; one perforated grating in window-sill, 8in. \times 4½in.; one triangular opening in ceiling, 12in., and two outlets in ceiling, about 4ft. sq.

The permanent inlet ventilation consists of the two Sherringham valves in the wall, and the perforated grating in window-sill. The total permanent area of inlet ventilation is 144 sq. in., which is equal to 3.6 sq. in. per head.

The total permanent outlet ventilation consists of the triangular opening in the ceiling, or 72 sq. in., and two outlets in the ceiling over gas pendants. The total area of permanent outlet ventilation openings is 4,680 sq. in., which is equal to 117.0 sq. in. per head.

Lighting. The total lighting area of this room is 65 sq. ft., which is one-sixth of the floor space.

The light is from the right.

There are six gas jets.

Recommendations.

- I. To repair the defective ceilings.
- II. To provide a cloak-room for the boys.
- III. To fix inlet ventilation openings where they are deficient.
- IV. To arrange that Rooms 2, 6 and 7 shall not contain at one time more than 40, 59 and 63 scholars respectively.

ST. PETER'S SCHOOL,

BYROM STREET.

This school consists of three departments: senior, junior, and infants.

The infants' and junior school, which is on the ground floor, was erected in 1872, and the senior school, which is the first floor, was erected in 1891.

The school is a two storey building, and is built of brick. It is in good condition, and is situated in Byrom Street.

There are two ventilating turrets, and two Cooper's ventilators in the roof.

Playgrounds.

There are two playgrounds: one for boys, which measures 400 sq. yds; and one for girls, which measures 294 sq. yds. The infants use either of these playgrounds.

Both playgrounds are separated from each other by a rubble wall, but access may be gained from one to the other by means of a door.

The playgrounds are well flagged and slope towards the centre, where there is a surface gully.

Sanitary Conveniences.

The sanitary conveniences consist of five stone troughs, and four McFarlane's for the girls and infants, and five stone troughs for the boys.

Both sets were in an insanitary state at the time of visit. They are said to be flushed by hand every day.

There are nine compartments for girls, and five for boys; the infants use any of these.

Each compartment measures 2ft. 3in. to seatboard, and 2ft. lin. wide. They are ventilated by a triangular opening. Some of the compartments have no doors.

In front of the compartments are the urinals. The infant boys' urinals are opposite the girls' compartments, and measure $12\frac{1}{2}$ linear feet. The boys' urinals measure 33 linear feet. The backs are cemented, 3ft. from the floor, and the floors are flagged. A channel has been formed leading to a properly trapped gully. The flushing is carried out by hand.

Refuse.

There are two ash receptacles, placed under covers adjoining the girls' sanitary conveniences, in their playground.

Cloak-Rooms.

There are three cloak-rooms for the senior, junior, and infants' departments respectively.

The juniors' cloak-room is situated in the hall, at the entrance on the ground floor, and it is underneath the staircase. The room is partitioned off by a glass partition. It measures 10ft. \times 12ft., and is lighted by two windows, each 7ft. 5in. \times 4ft., and a Tobin's tube, 6in. \times 4in., placed in the wall acts as an inlet ventilator. The room is open to the top of the staircase. There are about 50 hooks on the walls. The room is warmed by means of hot water pipes.

The infants' cloak-room is in communication with the schoolroom, No. 2, and is situated in the boys' yard. It measures 13ft. \times 10ft.; the floor is constructed of tiles, and it is lighted by one window, 4ft. \times 3ft., no part of which opens. There are no ventilating openings. There are about 50 hooks on the walls. The room is warmed by hot water pipes. In this room there is a slopstone, with untrapped pipe discharging over a gully outside.

The seniors' cloak-room is situated in the space at the top of the south staircase. There are 100 hooks placed on racks and walls.

Lavatory Accommodation.

In a small room adjoining the senior scholars' cloak-room there are three white earthenware lavatory basins, the waste pipes of which are connected to one untrapped common pipe, discharging over a downspout hopper head outside, and thence over a gully. In the same room there is also a white glazed sinkstone, the waste pipe of which is not trapped, and which discharges over a hopper head.

There is one white glazed lavatory basin, in a small space adjoining the south porch. This place is lighted by one window 2ft. x 4ft., and one outlet ventilator placed in wall, 6in. from ceiling, 12in. x 12in. The walls of the compartment are constructed of salt glazed bricks. There is also a pedestal closet for the use of teachers in this place. The soil-pipe (which takes another w.c., used by Sunday school scholars, placed in the room above), is carried up full bore.

There is hot and cold water over the lavatory basins. There is also a slop-stone in porch above mentioned. All the waste pipes discharge over gullies, but are not trapped.

Heating.

The heating is carried out by means of hot water pipes placed round the rooms, and in the junior room there is one set of stack pipes, 18 in number, and in the infants' room there are two sets of stack pipes 18 in number.

The pipes round the rooms are too near the floor to cleanse efficiently under them.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept every night, and washed once a year.

Walls.

The walls in the ground floor are rendered with plaster, and painted a red colour to a height of 4ft. from the floor; above this height they are painted a pale green colour. The first floor walls are salt-glazed bricks to a height of about 5ft. from floor, above this height are ordinary bricks not painted or coloured.

Staircases.

There are two wooden staircases leading to the schoolroom on the first floor.

They are easily ascended, and studs are fixed on the handrail to prevent scholars from sliding down. Both staircases are well lighted.

GROUND FLOOR.

There are three school rooms on the ground floor: No. 1 room is used by the juniors; Nos. 2 and 3 by the infants, and the room on the south of the infants' room is only used for parochial purposes.

Room No. 1

Is the large room, is used by the juniors, measures 74ft. \times 30ft., or 2,220 sq. ft., and the average number of children present during June, 1903, was 83.8, thus allowing 26.5 sq. ft. of floor space per head. The total cubic capacity is 33,670 cubic feet, or 401.7 cubic feet per head.

Ventilation. The ventilation consists of six windows, opening on hinges at the upper parts, 2ft. 5in. \times 2ft. 0in.; three iron grids, 12in. \times 12in., placed in the wall near the ceiling, and one opening near a door leading to turret, 3ft. 0in. \times 1ft. 0in.; six Tobin's tubes, 8ft. from floor; six grids, 8in. \times 3 $\frac{1}{2}$ in., 6in. from floor, and four grids, 8in. \times 8in., 6in. from floor.

The permanent inlet ventilation consists of six Tobin's tubes, and ten grids. The total area of inlet ventilation is 568 sq. in., which is equal to almost 6.9 sq. in. per head.

The permanent outlet ventilation consists of three iron grids placed in wall near the ceiling, and one opening in wall also near the ceiling, and leading into a turret over the porch. The total area of permanent outlet ventilation is 864 sq. in., which is equal to 10.3 sq. in. per head.

Lighting. The total lighting area of this room is 339 sq. ft., of which 29 sq. ft. are made to open. The lighting area is almost one-seventh of the floor space.

The light is from behind and the front.

The glass throughout the school is transparent.

There are 36 gas jets.

Room No. 2.

This room is the infants' large room, and measures 66ft. \times 21ft., or 1,386 sq. ft. The average number of children present during June, 1903, was 72.4, thus allowing 19.2 sq. ft. of floor space per head. The total cubic capacity is 21,021 cubic feet, or 290.3 cubic feet per head.

Ventilation The ventilation consists of five windows opening 1ft. 10in. \times 2ft. 0in. at the upper parts; two outlet ventilators, 9in. \times 3in.; four outlets over gas brackets, 2ft. in diameter; and four Tobin's tubes, 6in. \times 4in., at 7ft. 6in. from floor.

The permanent inlet ventilation consists of four Tobin's tubes, or 96 sq. in., which is equal to 1.3 sq. in. per head.

The permanent outlet ventilation consists of two outlets, and four circular openings over gas pendants. The total area of permanent outlet ventilation is 1,863 sq. in., or 25.7 sq. in. per head.

Lighting. The total lighting area of this room is 175 sq. ft., which is nearly one-eighth of the floor space.

The light is from behind and the front.

A large proportion of the glass is semi-transparent.

There are 40 gas jets.

Room No. 3

Is an infants' class-room, and measures 19ft. 10in. \times 21ft. 0in., or 416 sq. ft. The average number of children present during June, 1903, was 20, thus allowing 20.8 sq. ft., of floor space per head. The total cubic capacity is 6,559 cubic feet, or 327.9 cubic feet per head.

Ventilation. The ventilation consists of two windows opening 1ft. 10in. \times 1ft. 10in., at the top, and one casement window, 2ft. 9in. \times 2ft.; one outlet in chimney-breast, 2ft. \times 1ft., and one over one window, 9in. \times 3in.; two Tobin's tubes, 7ft. 6in. from the floor.

The permanent inlet ventilation consists of the two Tobin's tubes. The total area of permanent inlet ventilation is 48 sq. in., thus allowing 2.4 sq. in. per head.

The permanent outlet ventilation consists of one outlet in chimney-breast, and one in wall over window. The total area of permanent outlet ventilation is 315 sq. in., which is equal to 15.7 sq. in. per head.

There is also an open fire-grate, provided with a fire-guard.

Lighting. The total lighting area of this room is 62 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left and right.

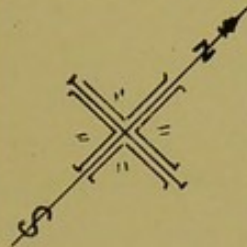
Some of the panes are semi-transparent.

There are 17 gas jets.

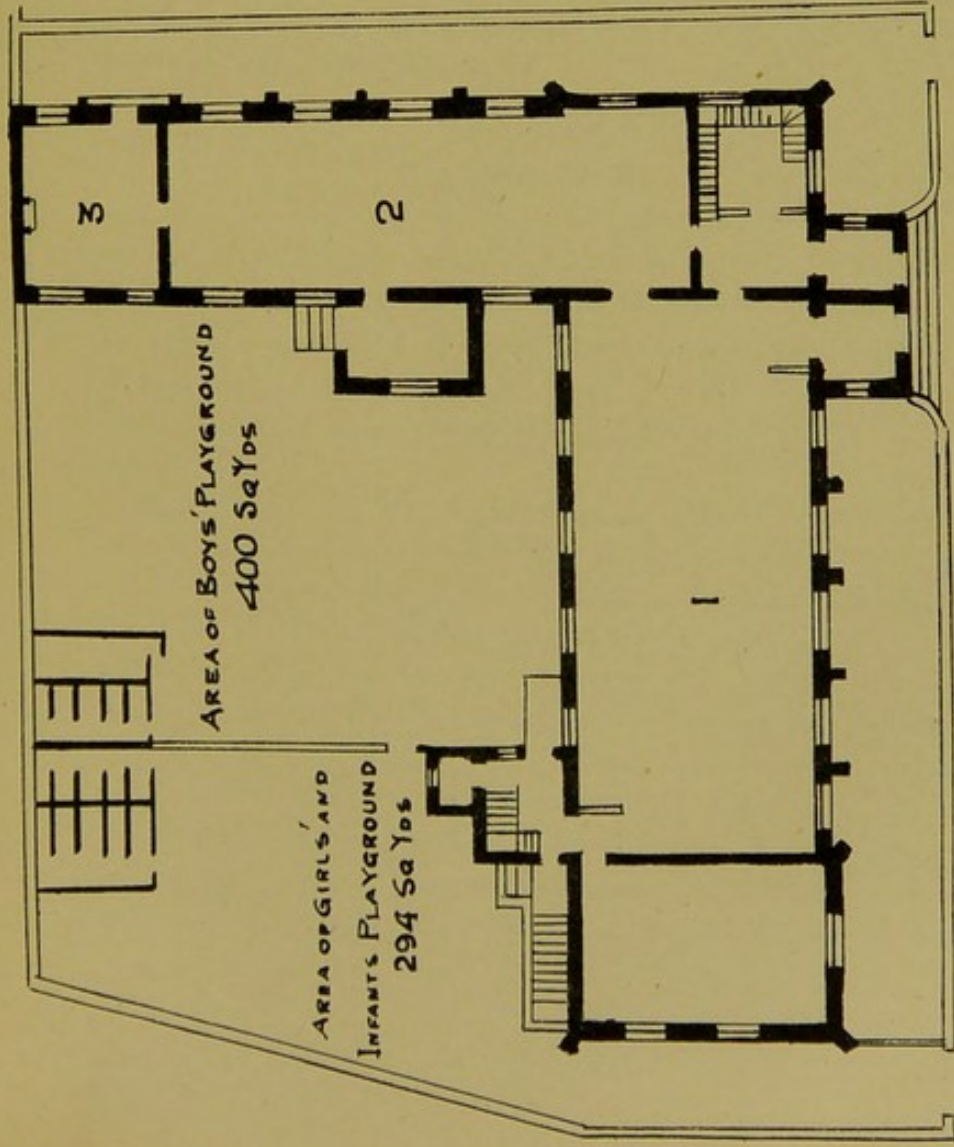
FIRST FLOOR.

The large room can be divided into four by curtains. There is a platform in this room, and this will be calculated separately from the large room, as there is always a class meeting on this platform and separated from large room by curtains.

ST. PETER'S SCHOOL BYROM ST.

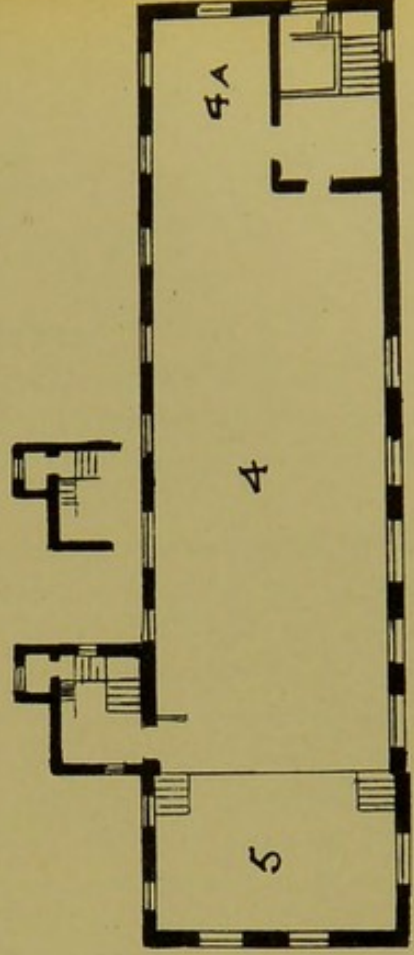


Room marked.	Average height.	Cubic feet.
1	74' 0" x 30' 0" x 15' 2" =	33670
2	66' 0" x 21' 0" x 15' 2" =	21021
3	19' 10" x 21' 0" x 15' 9" =	6559
4	73' 9" x 31' 0" x 16' 6" =	37723
4A	22' 6" x 17' 10" x 16' 6" =	6620
5	21' 4" x 32' 6" x 12' 9" =	8838



GROUND PLAN

Scale 30 feet to 1 inch



FIRST FLOOR PLAN



Large Room.

This room measures 2,687 sq. ft. The average number of children present during September, 1903, was 126, thus allowing 21.3 sq. ft. of floor space per head. The total cubic capacity is 44,343 cubic feet, or 351.9 cubic feet per head.

Ventilation. The ventilation consists of three hopper windows opening 2ft. x 1ft., at the top; two casement windows, 2ft. 5in. x 2ft. 0in.; four outlets in ceiling (can be opened and closed, but are out of order), 2ft. 3in. x 2ft. 3in.; eight Tobin's tubes, 10in. x 4in.; and eleven gratings, 7in. x 3in., on window-sills, at 4ft. 6in. from floor.

The permanent inlet ventilation consists of 11 inlets on window sills, and eight Tobin's tubes. The total area of permanent inlet ventilation is 551 sq. in., which is equal to 4.3 sq. in. per head.

The permanent outlet ventilation consists of four outlets in ceiling, or 2,916 sq. in., which is equal to 23.1 sq. in. per head.

Lighting. The total lighting area of this room is 414 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left and behind for one class and from the front and behind for three classes.

There are 44 naked gas jets in this room.

Classroom No. 5.

This room, as stated before, is situated on the platform, about 3ft. 9in. higher than main room, and is separated from the large room by curtains. It measures 21ft. 4in. x 31ft., or 693 sq. ft., and the average number of children present during the month of September, 1903, was 21, thus allowing 33 sq. ft. of floor space per head. The total cubic capacity is 8,838 cubic feet, or 420.8 cubic feet per head.

Ventilation. The ventilation consists of one Sherringham window, opening at the top, 2ft. x 1ft.; three gratings in window sills, 7in. x 3in.; one outlet in ceiling, 2ft. 3in. x 2ft. 3in.; two Tobin's tubes, 10in. x 4in., at 6ft. from floor, and outlet in chimney-breast, 1ft. x 1ft., and an open fire-grate.

The permanent inlet ventilation consists of two Tobin's tubes, and three gratings in window-sills. The total area of permanent inlet ventilation is 143 sq. in., which is equal to 6.8 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, one outlet in the chimney-breast. The total area of permanent outlet ventilation is 873 sq. in., or 41.6 sq. in. per head.

There is a round iron stove at one side of this room, not guarded.

Lighting. The total lighting area is 161 sq. ft., which is equal to one-fourth of the floor space.

The light is from the left, right, and front.

There are six naked lights.

Recommendations.

- I. To reconstruct the sanitary conveniences and trap all waste pipes.
- II. To improve the cloak-room accommodation for the senior department.
- III. To improve the inlet ventilation openings in No. 2 Room.
- IV. To provide clear glass in windows when possible.
- V. To discontinue the use of curtains for dividing classes.

MAYSON ST. INDUSTRIAL SCHOOL.

This school was erected in 1889-90, and opened in September 1890. It is a stone-fronted building of two storeys. The first floor is used for teaching.

Playgrounds.

There are two playgrounds, one for boys and one for girls. The boys' playground measures 447 sq. yds., and the girls' playground 153 sq. yds. There is a covered playground for boys. The playgrounds are flagged.

Sanitary Conveniences

The sanitary conveniences are of the open earthenware trough type with wooden seatboards, and are situated 15ft. and 50ft. respectively from the school. There are four compartments and a urinal for boys (12ft.), and three for girls. They are flushed three times a day. There is one pedestal w.c. attached to each set of conveniences, and a pedestal wash-out closet on the first floor.

Dry Refuse.

The dry refuse is stored in a brick ash-pit adjoining the girls conveniences.

Walls.

The internal walls are of glazed bricks to the height of 4ft. 6in. from the floor, and the remainder of the walls are coloured white.

Floors.

The floors are formed of wooden blocks.

Lighting.

All the windows are of plain glass except the bottom panes in the large rooms.

Heating.

The heating of the rooms is carried out by means of hot water pipes.

Cloak-Rooms

There are two cloak-rooms on the ground floor—one for boys and one for girls.

Boys' Cloak-Room.

The boys' cloak-room adjoins the boys' playground, and measures 23ft. x 8ft. It is lighted by six windows, 3ft. x 2ft. 4in. All the windows are made to open. There are 64 pegs.

There are 19 white enamelled lavatory basins, the waste pipe discharging over a gully outside.

The floor is flagged.

Adjoining this room is a bath-room with a concreted bath, 8ft. 9in. x 14ft. 6in. x 4ft. 3in.

Girls' Cloak-Room

Is situated at the Mayson Street part of the school, and is 18ft. 6in. x 8ft. 3in. The floor is flagged. This room is lighted by one window, 3ft. x 2ft. 4in. There are 64 pegs arranged along the walls.

There are ten white enamelled lavatory basins, the waste pipe discharging into a chamber outside. There is a surface gully in this room.

Adjoining this cloak-room is a bath-room in which there is a concreted bath, 12ft. x 6ft. x 5ft.

FIRST FLOOR.

This school consists of one large schoolroom, and two class-rooms. These rooms are situated on the first floor, the stairs being of stone, and a flight of stairs placed at each end.

The number of children in this school varies, and during some lessons are all together in the large schoolroom, and at other times

they occupy both class-rooms. The following particulars are in respect of the schoolroom when occupied by all the children, and the class-rooms when occupied by the different classes.

Schoolroom No. 1.

The average number present in this room during September, 1903, was 27.4.

The total floor space measures 1,618 sq. ft., or an average of 59.0 sq. ft. per scholar. The total cubic capacity is 25,087 cubic feet, or 915.4 cubic feet per head.

Lighting. The total lighting area measures 233 sq. ft., or about one-seventh the floor space.

The light is from the left, right, and front.

There are eighteen windows, made to open on hinges.

Ventilation. There are four outlet ventilators in the ceiling giving an area of 2,304 sq. in., thus allowing 84.4 sq. in. per head.

There are no permanent inlet ventilators.

Room No. 2.

The average number present in this room during September, 1903, was 13.

The total floor space measures 369 sq. ft., or an average of 28.3 sq. ft. per scholar. The total cubic capacity is 5,073 cubic feet, or 390 cubic feet per head.

Lighting. The total lighting area measures 49 sq. ft., or about one-seventh of the floor space.

The light is received from the left.

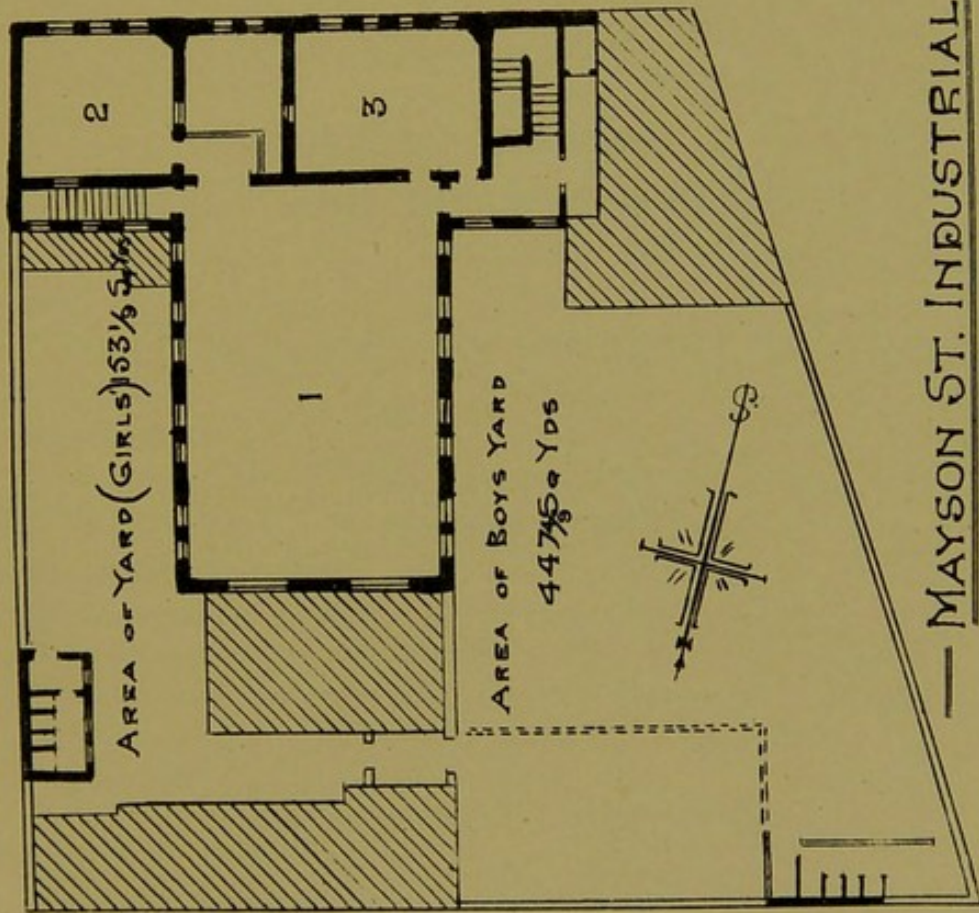
There is an outlet ventilator, 2ft x 2ft., in the ceiling, and an open fireplace. There are no permanent inlet ventilators. The three windows open at the top, on hinges.

The permanent outlet ventilation consists of one opening in ceiling, 2ft. x 2ft., or 576 sq. in. thus allowing 44.3 sq. in. per head.

Room No. 3.

The average number present in this room during September, 1903, was 14.

The total floor space measures 432 sq. ft., or an average of 30.8 sq. ft. per scholar. The total cubic capacity is 5,940 cubic feet, or 424.3 cubic feet per head.



Room marked.	Average height.	Cubic feet.
1	50' 7" x 32' 0" x 15' 6" =	25087
2	20' 6" x 18' 0" x 13' 9" =	5073
3	24' 0" x 18' 0" x 13' 9" =	5940

— MAYSON ST. INDUSTRIAL SCHOOL —

Scale 30 feet to 1 inch.



Lighting. The total lighting area measures 62 sq. ft., or about one-seventh of the floor space.

The light is from the left.

Ventilation. The four windows open at the top on hinges.

There are two outlet ventilators in the ceiling, each 2ft. x 2ft. and an open fireplace, with a guard.

There are no permanent inlet ventilators.

The outlet ventilation measures 576 sq. in., or an average of over 41.1 sq. in. per scholar.

Recommendation.

- I. To improve the inlet ventilation openings, where necessary.

AUDLEY RANGE

Mixed and Infants' School.

This school was erected in 1878, and is a one-storey building of stone.

There are six Boyle's ventilators on the roof, and an iron grate in the gable-ends.

Playground.

There is one playground which is asphalted, and which has an area of 520 sq. yds. There is no covered playground.

Sanitary Conveniences

The sanitary conveniences are of the earthenware trough type, and are situated in the yard at a distance of 40ft. from the school, with an open passage in front, the wall of the passage being 6ft. high.

The floor of the conveniences is about 12in. below the level of the surface of the playground.

There are five compartments for girls and four for infants, one of which is kept locked.

Behind the above there are five compartments for boys, and a urinal 8ft. 9in. linear feet.

The conveniences are flushed daily, and the urinal for the boys is flushed by hand once a week.

There are three stone steps from the school down to the playgrounds.

Dry Refuse.

The dry refuse is stored in an open ash-pit adjoining the conveniences.

Walls.

The internal surfaces of the walls are plastered, and coloured dark grey and pink. They are boarded to a height of 4ft. from the floor.

Floors.

The floors are boarded. They are swept daily, and washed once a year at least.

Heating.

The heating of the rooms is by means of hot water pipes carried along the walls.

Lighting

The glass in the windows is, for the most part, ribbed, and there are thick mullions on the windows.

The artificial light is gas.

Cloak-Rooms.

There are three cloak-rooms; for boys', girls', and infants', respectively.

The Girls'

The girls' cloak-room is adjacent to class-room No. 3.

There are 233 pegs arranged on the walls and on racks.

The walls are boarded to a height of 3ft. 6in. from the floor.

The room is heated by hot water pipes, and lighted by one window.

There is one window hopper, 2ft. x 9in., and two swivel windows, and a circular outlet in the roof.

The Boys'

The boys' cloak-room (No. 1) is situated next to the girls' cloak-room, and near the back entrance to the school.

There are 50 pegs arranged on the walls.

This room is lighted by one window which will not open, and is heated by hot water pipes. There is an outlet in the roof.

The Infants'

The cloak-room for the infants (No. 7) is situated between the infants' main room, and class-room, No. 8.

This room is heated by a radiator, and is lighted by two windows, in each of which is a hopper. There is also an outlet in the roof, and an inlet in each of the window-sills.

There are 144 pegs arranged along the walls, and on horses, or racks.

The mixed department consists of one main room and three classrooms, and the inlet ventilation is by means of window-sill ventilators and Boyle's outlet ventilators, also window hoppers.

Room No. 5.

The average number present during September, 1903, was 260.

The total floor space measures 3,563 sq. ft., or an average of over 13.7 sq. ft. per scholar. The classes are separated by means of green curtains. The total cubic capacity is 78,413 cubic feet, or 301.5 cubic feet per head.

Lighting. The total lighting area measures 450 sq. ft., which is between one-seventh and one-eighth of the floor space.

The light is chiefly from behind and the front.

Ventilation. The total permanent inlet ventilation area measures 88 sq. in., or an average of less than .3 sq. in. per scholar, and consists of eight window-sill ventilators, 5½ in. × 2 in., at a height of 3 ft. 7 in. from the floor.

The total permanent outlet ventilation area measures 3,044 sq. in., or an average of 11.7 sq. in. per scholar, and consists of four circular openings, 12 in. in diameter, and two outlets in the roof, 3 ft. square, leading to Boyle's ventilators in the roof.

There are eight window hoppers, 8 ft. 6 in. from the floor, opening 2 ft. × 9 in., and there is cross ventilation.

There is a platform, or a stage, at one end of this room which is 3 ft. 4 in. above the level of the school floor. Underneath this stage are stored tables, etc., for parties. Dust also accumulates beneath this structure.

A class occupies this platform for lessons, and a baize screen is used about 6 ft. in height, to separate this class from the main-room.

Also the main part of this room is divided into two by green curtains.

Classroom No. 4.

The average number present during September, 1903, was 57.

The total floor space measures 313 sq. ft., or an average of 5.4 sq. ft. per scholar. The total cubic capacity is 5,722 cubic feet, or 100.3 cubic feet per head.

Lighting. The total lighting area measures 72 sq. ft., or over one-fourth of the floor space.

The light is from behind.

Ventilation. The total permanent inlet ventilation area measures 11 sq. in., or nearly .2 sq. in. per scholar, and consists of one window-sill ventilator, $5\frac{1}{2}$ in. \times 2 in.

The total permanent outlet ventilation area measures 113 sq. in., or an average of 1.9 sq. in. per scholar, and consists of one circular ventilator in the roof, 12 in. in diameter.

There is one window hopper, opening 2 ft. \times 9 in., 8 ft. 6 in. from floor, and one opening on a swivel at the top.

Room No. 3.

The average number present in this room during September, 1903, was 50.

The total floor space measures 276 sq. ft., or an average of 5.5 sq. ft. per scholar. The total cubic capacity is 5,051 cubic feet, or 101.1 cubic feet per head.

Lighting. The total lighting area measures 47 sq. ft., which is nearly one-sixth of the floor space.

The light is from the left.

Ventilation. The total permanent inlet ventilation measures 11 sq. in., or an average of .2 sq. in. per scholar, and consists of one window-sill ventilator, $5\frac{1}{2}$ in. \times 2 in.

The total outlet ventilation consists of one circular opening in ceiling, 12 in. in diameter, or 113 sq. in., or an average of over 2.2 sq. in. per scholar. There is one window hopper, opening 2 ft. \times 9 in., and also two windows opening at the top on swivels.

Room No. 10.

The average number present in this room during September, 1903, was 33.

The total floor space measures 310 sq. ft., or an average of 9.4 sq. ft. per scholar. The total cubic capacity is 5,668 cubic feet, or 171.7 cubic feet per head.

Lighting. The total lighting area measures 72 sq. ft., or more than one-fourth of the floor space.

The light is from the left.

Ventilation. The total permanent inlet ventilation consists of one grating in window-sill, $5\frac{1}{2}$ in. \times 2 in., or 11 sq. in., thus allowing .3 sq. in. per scholar.

The total permanent outlet ventilation area measures 113 sq. in., or 3.4 sq. in. per scholar, and consists of one circular outlet in the roof.

There is one window hopper, opening 2 ft. \times 9 in., and one swivel window near the ceiling.

Room No. 6.

The average number present in this room during July, 1903, was 120.

The total floor space measures 1,162.5 sq. ft., or an average of 9.6 sq. ft. per scholar. Part of the floor is in the form of a gallery, and the classes are separated by a green curtain, about 7 ft. in height. The total cubic capacity is 22,669 cubic feet, or 188.9 cubic feet per head.

Lighting. The total lighting area measures 229 sq. ft., or about one-fifth the floor space.

The light is from the left, right, and behind.

There are six gas jets.

Ventilation The total permanent inlet ventilation area measures 66 sq. in., or an average of .5 sq. in. per scholar, and consists of six window-sill ventilators, 5 in. \times $2\frac{1}{2}$ in., at a height of 3 ft. 6 in from the floor.

The total permanent outlet ventilation area measures 2,592 sq. in., or an average of 21.6 sq. in. per scholar, and consists of two outlets, 3 ft. square, in the ceiling.

There are four window hoppers, 2 ft. \times 9 in., and four opening on swivels, 7 ft. from floor, and one circular window, 1 ft. 6 in., also an opening near the ceiling. A curtain divides this room into two, the back portion of which is a gallery for babies.

Infants' Classroom, No. 8.

The average number present in this room during July, 1903, was 40.

The total floor space measures 351.5 sq. ft., or an average of 8.7 sq. ft. per scholar. The total cubic capacity is 6,415 cubic feet, or 160.3 cubic feet per head.

Lighting. The total lighting area measures 80 sq. ft., or between one-fourth and one-fifth the floor space.

The light is from the right.

There are six gas jets.

Ventilation. The total permanent inlet ventilation area measures 22 sq. in., or an average of .5 sq. in. per scholar, and consists of two window-sill ventilators, $5\frac{1}{2}$ in. \times 2 in., at a height of 4 ft. from the floor.

The total permanent outlet ventilation area measures, 1,296 sq. in., or an average of 32.4 sq. in. per scholar, and consists of one outlet in the ceiling, 3 ft. square.

The partition between this class-room and class-room No. 9 is of wood.

There is one hopper, and one swivel window, 8 ft. 3 in. from the floor.

Infants' Classroom (Babies) No. 9.

The average number present during July, 1903, was 50.

The total floor space measures 388.5 sq. ft., or an average of 7.7 sq. ft. per scholar. The total cubic capacity is 7,090 cubic feet, or 141.8 cubic feet per head.

Part of the floor is in the form of a gallery.

Lighting. The total lighting area measures 63 sq. ft., or a little over one-sixth of the floor space.

Ventilation. The total permanent inlet ventilation area measures 580 sq. in., or an average of 11.6 sq. in. per scholar, and consists of two window-sill ventilators, $5\frac{1}{2}$ in. \times 2 in., and three Tobin's tubes (two 24 in. \times 6 in., and one 3 ft. 9 in. \times 6 in.) in which there are coils of hot water pipes.

The total permanent outlet ventilation area measures 1,296 sq. in., or 25.9 sq. in. per scholar, and consists of one outlet, 3 sq. ft., in the roof.

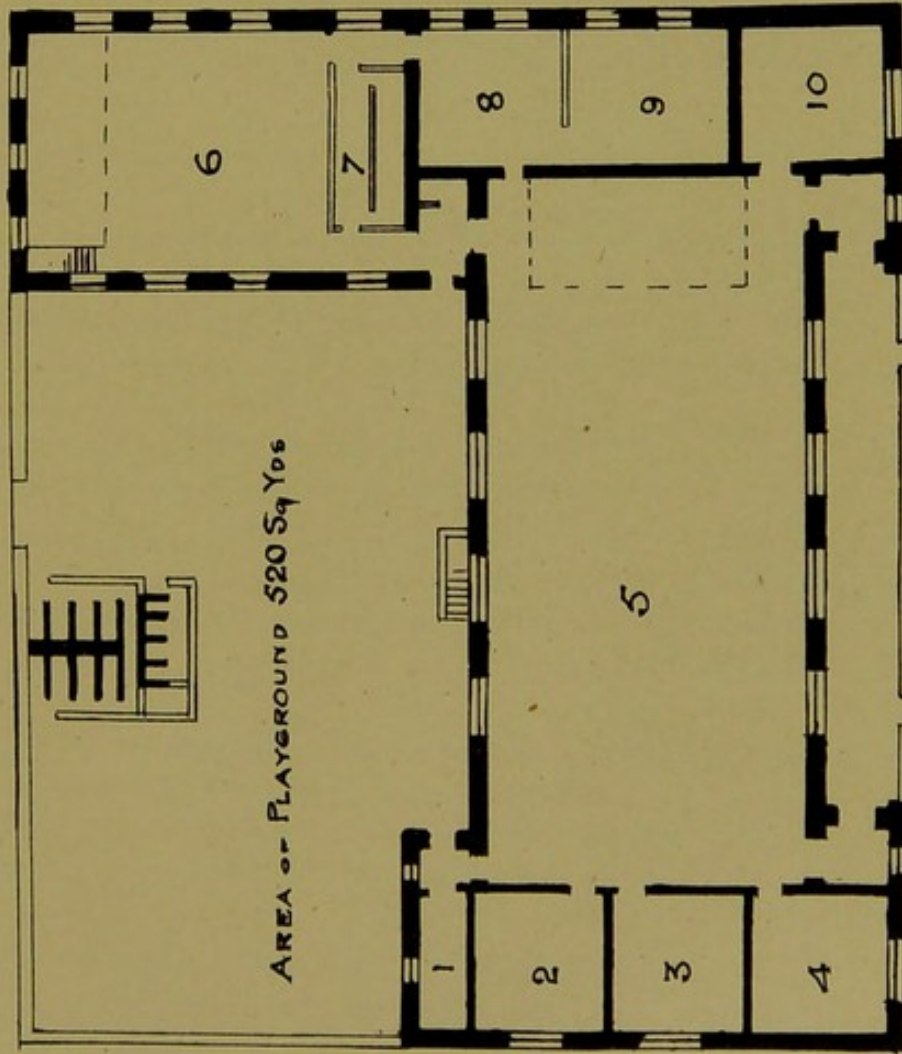
There are two window hoppers opening 24 in. \times 4 in.

Recommendations.

- I. To make the seatboards of the infants' sanitary conveniences a suitable height.
- II. To provide a cover for the ash-tub.
- III. To improve the ventilation of the boys' and girls' cloak-rooms.

AUDLEY RANGE SCHOOL

Scale 30 feet to 1 inch



AREA OF PLAYGROUND 520 Sq Yds

AUDLEY RANGE

Room marked	Average height.	Cubic feet.
1	17' 8" x 6' 9"	
2	17' 8" x 16' 0" x 18' 3" =	5158
3	17' 8" x 15' 8" x 18' 3" =	5051
4	17' 8" x 17' 9" x 18' 3" =	5722
5	89' 8" x 39' 9" x 22' 0" =	78413
6	37' 6" x 31' 0" x 19' 6" =	22669
7	26' 0" x 9' 0"	
8	19' 0" x 18' 6" x 18' 3" =	6415
9	21' 0" x 18' 6" x 18' 3" =	7090
10	17' 9" x 17' 6" x 18' 3" =	5668



- IV. To abolish the use of curtains for dividing the classes.
- V. To improve the inlet ventilation openings where they are deficient.

BANK TOP Mixed and Infant School.

The main room in this school was erected in 1853, and additions and alterations have been made from time to time, the last being in 1903.

This school is a one-storey building of brick, and there are seven Boyle's outlet ventilators fixed on the roof, and also one revolving cowl.

Playgrounds.

There are two playgrounds: one for boys and one for girls and infants, which are flagged all over.

There are two covered playgrounds: one for girls and infants, and one for boys.

These covered playgrounds have an area of over 1,000 sq. ft. for girls and infants, and 808 sq. ft. for boys.

The uncovered playgrounds measure 130 sq. yds. for boys, and for girls and infants 133 sq. yds.

The playgrounds are about 6ft. below the school level, and are approached from the school by 9 and 13 stone steps from the two respective exits.

The two playgrounds are separated by a brick wall.

There is also a public playground near this school.

Sanitary Conveniences.

The sanitary conveniences consists of two short hopper closets for teachers, and a set of McFarlane's conveniences for scholars, with an open passage in front, 3ft. in breadth, and the passage wall is about 7ft. high.

There are four compartments, and an unflushed urinal for boys, 7ft. 6in., and eight compartments for girls and infants.

The conveniences are 22ft. from the school, and are flushed twice a week. They are not well lighted or ventilated.

Dry Refuse.

The dry refuse is stored in a brick ash-pit under the stone steps leading to the infants' school from the playground.

Walls.

The internal surfaces of the walls are plastered, and to a height of 5ft. from the floor are boarded, and the remainder grey and pink washed.

Floors.

The floors are boarded, and are swept daily and washed once a year.

Lighting.

The glass in the windows is plain except the bottom panes. There are wooden and glass partitions between the class-rooms.

The artificial light is gas.

Heating.

The rooms are heated by means of hot water pipes, and in the class-room for babies, No. 1, there is an open fire-place, with a fire-guard.

The boiler fire for heating purposes is fixed under class-room No. 4 infants, and probably fumes will find their way into the room.

Cloak-Rooms.

There are four cloak-rooms: one for boys, two for girls, and one for infants.

One of the girls' cloak-rooms is situated near the main entrance, No. 10, and the other near the passage, No. 7.

The cloak-room near the main entrance contains 130 pegs arranged along the wall, and is heated by hot water pipes.

This room is lighted by three windows, which will open.

The floor is concrete. There is a white enamelled lavatory basin the waste pipe of which is trapped, which discharges over a gully outside.

In cloak-room No. 7 there are 112 pegs, and the walls are boarded to a height of 4ft. from the floor, which is concreted.

This room is heated by hot water pipes, and lighted by two windows which will open.

The cloak-room for boys is situated near the entrance to Class-room No. 9, and is lighted by a window 3ft. x 2ft., made to open as a hopper.

There are 46 pegs arranged along the walls.

The infants' cloak-room is situated near the babies' class-room, and numbered 2. The floor is of concrete. This room is lighted by two hinge windows.

There is one white glazed lavatory basin in this cloak-room; the waste pipe is trapped, and discharges into the hopper head of a downspout, which is directly connected to the drain.

MIXED DEPARTMENT.

The mixed department consists of one main room divided into three, and two class-rooms.

Room No. 8b.

The average number present in this room during September, 1903, was 58.5.

The total floor space measures 748 sq. ft., or an average of 12.8 sq. ft. per scholar. The total cubic capacity is 14,025 cubic feet, or 239.7 cubic feet per head.

Lighting. The total lighting area measures 132 sq. ft., or one-sixth the floor space.

The light is from behind and the right.

Ventilation. This room is ventilated by means of four Sherringham window hoppers, and one outlet in the ceiling, 2ft. x 2ft., or 576 sq. in., thus allowing 9.8 sq. in. per scholar.

There is partial cross ventilation.

There is no permanent inlet ventilation.

A lavatory basin is fixed in this class-room, the waste pipe from which discharges over a gully.

Room No. 8.

The average number present during September, 1903, was 61.2.

The total floor space measures 798 sq. ft., or an average of thirteen sq. ft., per scholar. The total cubic capacity is 14,962 cubic feet, or 244.4 cubic feet per head.

Lighting. The total lighting area measures 93 sq. ft., or one-eighth of the floor space.

The light is from the left and right.

Ventilation. This room is ventilated by means of three Sherringham window hoppers, opening 3ft 9in. x 9in., at a height of 7ft. 6in. from the floor.

There are no permanent inlet ventilators.

The total permanent outlet ventilation consists of one outlet in ceiling, 2ft. x 2ft., or 576 sq. in., thus allowing 9.4 sq. in. per scholar.

There is cross ventilation.

Room No. 8a.

The average number present during September, 1903, was 74.7.

The total floor space measures 870 sq. ft., or an average of 11.7 sq. ft. per scholar.

The total cubic capacity is 16,312 cubic feet, or 220.4 cubic feet per head.

Lighting. The total lighting area measures 132 sq. ft., or between one-sixth and one-seventh of the floor space.

The light is from the left and right.

Ventilation. There is no permanent inlet ventilation, and the permanent outlet ventilation measures 576 sq. in., or an average of 7.7 sq. in. per scholar. There are four window hoppers—three, 3ft. 9in. × 9in., and one, 4ft. 9in. × 9in., at a height of 7ft. 6in. from the floor.

There is cross ventilation.

Room No. 9.

The average number present in this room during September, 1903, was 61.

The total floor space measures 660 sq. ft., or an average of 10.8 sq. ft. per scholar. The total cubic capacity is 9,240 cubic feet, or 151.4 cubic feet per head.

Lighting. The total lighting area measures 157 sq. ft., or about one-fourth of the floor space.

The light is from the left and right.

Ventilation. There is no permanent inlet ventilation and the permanent outlet ventilation consists of three outlets in roof, or 675 sq. in., or an average of 11 sq. in. per scholar.

There is cross ventilation when the six window hoppers are open. Two of these open 4ft. 9in. × 9in., 13ft. high; three open 3ft. 9in. × 9in., two of which open at 7ft. 6in. and one at 13ft.; one opens 3ft × 9in., 14ft. high. There is also one casement window, 2ft. 1in. × 2ft. 2in., at 4ft. from floor.

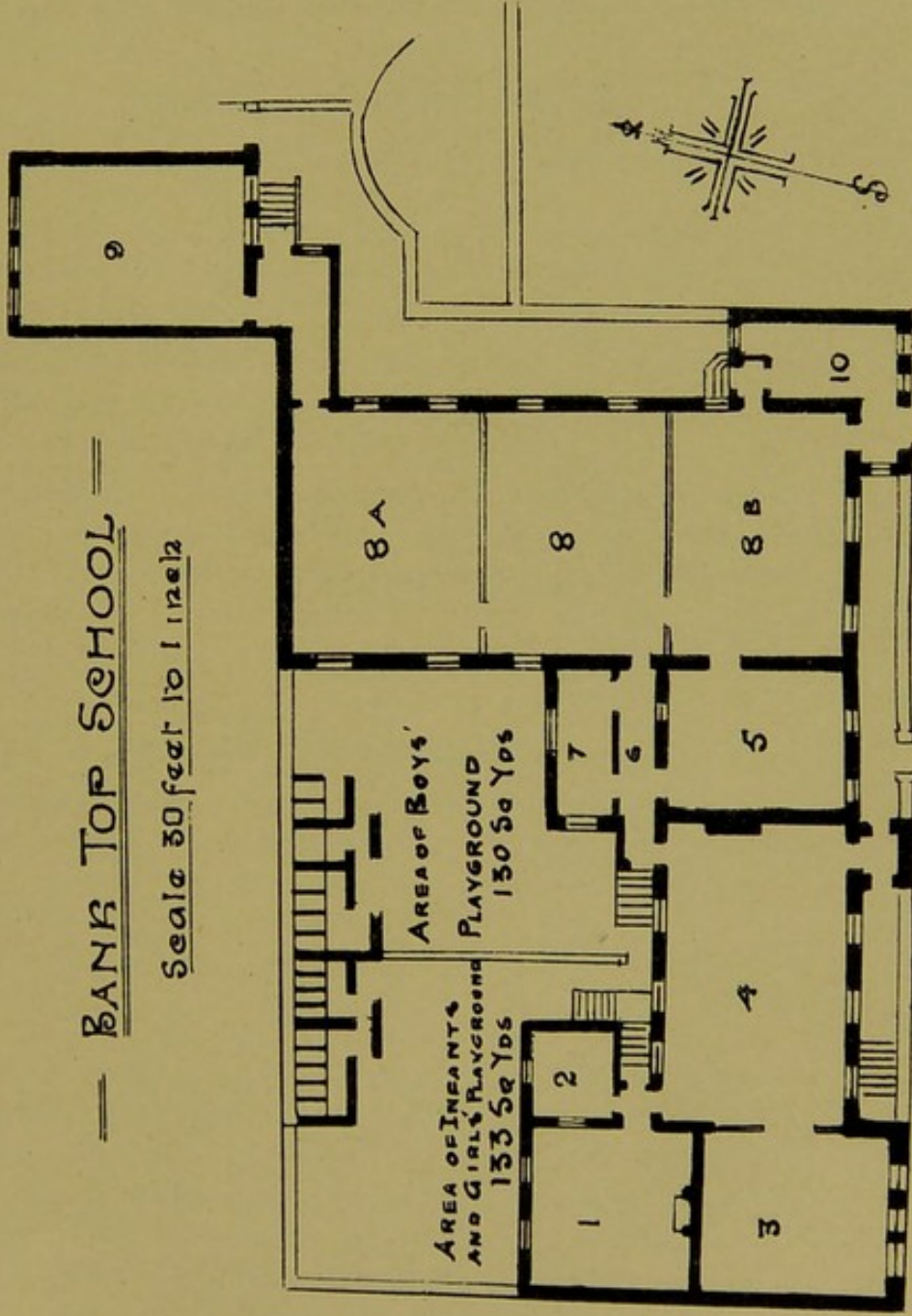
Room No. 5.

The average number present in this room during September, 1903, was 45.2.

The total floor space measures 462 sq. ft., or an average of 10.2 sq. ft. per scholar. The total cubic capacity is 6,583 cubic feet, or 145.6 cubic feet per head.

— BANK TOP SCHOOL —

Scale 30 feet to 1 inch



Room marked	Average height.	Cubic feet.
1	21' 0" x 20' 9" x 14' 6" =	6318
2	12' 0" x 11' 8" x 14' 6" =	7949
3	25' 6" x 21' 6" x 14' 6" =	18098
4	40' 6" x 23' 10" x 18' 9" =	18098
5	24' 0" x 19' 3" x 14' 3" =	6583
6	26' 6" x 4' 0" x 0" =	
7	20' 0" x 8' 0" x 0" =	
8	24' 0" x 33' 3" x 18' 9" =	14962
8A	26' 2" x 33' 3" x 18' 9" =	16312
8B	22' 6" x 33' 3" x 18' 9" =	14025
9	30' 0" x 22' 0" x 14' 0" =	9240
10	19' 9" x 9' 9" x 0" =	



Lighting. The total lighting area measures 64 sq. ft., or between one-seventh and one-eighth of the floor space.

The light is from the left and right.

Ventilation The total permanent outlet ventilation area measures 216 sq. in., or an average of 4.7 sq. in. per scholar, and consists of one outlet in the roof.

There is cross ventilation when the four window hoppers are open; two measuring 3ft. 3in. x 9in., one 3ft. 6in. x 9in., and one 1ft. 6in. x 9in.

Infants' Schoolroom No. 4.

The average number present in this room during July, 1903, was 57.2.

The total floor space measures 965.3 sq. ft., or an average of 16.8 sq. ft. per scholar. The total cubic capacity is 18,098 cubic feet, or 316.3 cubic feet per head.

Lighting. The total lighting area measures 139 sq. ft., or one-seventh the floor space.

The light is from the left and right.

Ventilation. There is no permanent inlet ventilation, and the permanent outlet ventilation consists of two outlets in ceiling, 12in. x 12in., or 288 sq. in., or an average of 5.0 sq. in. per scholar. There is also an open fire-place in this room.

There are six hoppers opening, 3ft. 2in. x 9in., about 14ft. above the floor.

Infants' Classroom No. 3.

The average number present during July, 1903, was 49.9.

The total floor space measures 548.25 sq. ft., or an average of 10.9 sq. ft. per scholar. The total cubic capacity is 7,949 cubic feet, or 159.3 cubic feet per head.

The total lighting area measures 100 sq. ft., or about one-fifth of the floor space.

The light is from the right and above.

There is one window, near the ceiling, opening outwards, 2ft. x 1ft. 6in., and four hinge windows, two opening 2ft. 4in. x 2ft., and two opening 1ft. 7in. x 3ft.

There are two outlets in the roof regulated by wooden flaps, 12in. x 12in., or 5.7 sq. in. per head.

There is no permanent inlet ventilation.

Infants' Classroom (Babies) No. 1.

The average number present in this room during July, 1903, was 62.8.

The total floor space measures 435.75 sq. ft., or an average of 6.9 sq. ft. per scholar. The total cubic capacity is 6,318 cubic feet, or 100.6 cubic feet per head.

Lighting. The total lighting area measures 52 sq. ft., or one-eighth of the floor space.

The light is from the left.

Ventilation. The ventilation consists of three hinge windows, two of which open 3ft. x 1ft. 6in., and one 2ft. 9in. x 1ft.—the latter opens outwards; two outlets in ceiling, 12in. x 12in., or 288 sq. in., and one open fire-place (with guard).

There is no permanent inlet ventilation, and the permanent outlet ventilation is equal to 4.6 sq. in. per head. One window also opens from this class-room into cloak-room, No. 2.

Recommendations.

- I. To improve the sanitary conveniences and storage of dry refuse.
- II. To provide inlet and outlet ventilation openings where required.
- III. To arrange that Room No. 1 shall not contain at one time more than 48 children.

ST. MARY'S R.C. SCHOOL,

DEAN STREET.

This school, which is a brick structure, and in good condition, was erected in 1870, and enlarged in 1898 and 1899. It is situated in Dean Street. It is a two-storey building. The boys, girls, and infants are separated. The boys occupy the old part, and the girls the first floor, and the infants the ground floor of the new building.

There is a men's club over the infants' school.

Playgrounds.

There are two playgrounds. The boys' measures 211 sq. yds., and the girls' and infants' 73 sq. yds. The playgrounds are separated from each other, are well flagged, and slope towards a surface gully.

The girls descend an iron staircase into their playground, which is somewhat small.

There is no covered playground.

Sanitary Conveniences.

The girls and infants have five Adams' trough closets. The boys have four compartments on the combined pedestal and trough system.

The girls' sanitary conveniences are about 4yds. from the nearest window, and the boys' about 8yds. The compartments are well lighted and ventilated. There is a passage in front of the compartments open to external air above.

Each series of conveniences is flushed twice a day by an automatic cistern.

There are 11 linear feet of urinals for the infants, adjoining the girls' closets, and there are 14 linear feet for boys in front of their compartments. The backs are constructed of brick, and the floor is flagged, leading to a properly trapped gully. The infants' urinal is very objectionable; it is not properly constructed, and is opposite the infants' schoolroom door. These urinals are flushed by hand.

There is one pan closet in room adjoining Sister's room, which is insanitary.

Drainage.

The drainage appears to be in good order. The downspouts are partly connected. The lavatory waste pipes are not trapped, but discharge over gullies in the yard.

Refuse.

There is a dry ash-pit for the refuse, emptied from the back-road.

Cloak-Rooms.

There are three cloak-rooms. The boys' cloak-room (No. 7) is situated at entrance to boys' school, and measures 17ft. 10in. x 17ft. 0in. It is well lighted and ventilated.

There are 240 hooks placed on racks and walls.

The room is warmed by hot water pipes.

The girls' cloak-room is situated on the left, at the entrance to the Men's Club.

There are about 200 hooks on racks.

The cloak-room is warmed by hot water pipes.

The infants' cloak-room is situated on the right, at the exit to the girls' playground. It is well lighted and ventilated, and warmed by hot water pipes.

There are about 240 hooks, placed on racks and against the walls.

Lavatory Accommodation.

There are four lavatory basins in the boys' cloak-room (one of which is missing), and the waste pipes discharge into one common pipe, and thence discharge over gully in the yard. There are four lavatory basins in the girls' cloak-room, the waste pipes discharge into one common pipe, and thence over gully in the yard. There are also four lavatory basins and one sink in the infants' cloak-room, the waste pipes of which discharge similarly.

Walls.

The walls in the infants' school are formed of brown glazed bricks, 4ft. from the floor, and above this height they are rendered with plaster, and painted a green colour.

The walls in the boys and girls' schools are cemented 4ft. high, and painted a brown colour; above this height they are rendered with plaster, and painted a green colour.

Floors.

The floors are constructed of tongued and grooved boards. They are swept every night, and washed twice a year.

Heating.

The heating is carried out by hot water pipes placed round the rooms.

BOYS' DEPARTMENT.

There are three rooms for the boys, on the ground floor.

Room No. 1.

Is the boys' large room, and measures 49ft. 6in. \times 34ft., or 1,683 sq. ft. The average number of boys present during September, 1903, was 107, thus allowing 15.7 sq. ft. of floor space per head. The total cubic capacity is 24,123 cubic feet, or 225.4 cubic feet per head.

Ventilation. The ventilation consists of four window openings, 12in. \times 1ft. 8in.; three, 1ft. 4in. \times 12in.; and two, 3ft. 8in. \times 2ft.; two casement windows, 5ft. 0in. \times 2ft. 6in., and four 5ft. \times 1ft. 8in.; 11 slide ventilators (7½in. \times 8in.) near the floor, an outlet in the chimney-breast, near the ceiling (9in. \times 9in.), and seven gratings in beams, (3ft. \times 9in.).

The permanent inlet ventilation consists of the 11 slide ventilators near the floor, behind the hot water pipes. The total area of permanent inlet ventilation is 660 sq. in., thus allowing 6.1 sq. in. per head.

The permanent outlet ventilation consists of one grating in the chimney-breast, 9in. \times 9in., and seven gratings, 3ft. \times 9in., in beams which support the 1st floor. The total area of permanent outlet ventilation is 2,349 sq. in., or 21.9 sq. in. per head.

Lighting. The total lighting area is 241 sq. ft., which is equal to one-seventh of the floor space.

The light is from behind, left, and in front slightly.

There are 48 gas jets.

There are two windows which are of little use, because the light is obstructed by an iron staircase in the girls' yard.

Room No. 2

Is a boys' class-room, measuring 15ft. \times 18ft., or 270 sq. ft., and the average number of boys present during September, 1903, was 36, thus allowing 7.5 sq. ft. of floor space per head. The total cubic capacity is 3,870 cubic feet, or 107.5 cubic feet per head.

Ventilation. The ventilation consists of one casement window, 5ft. 0in. \times 3ft. 1in., and one window opening 2ft. \times 3ft., two gratings over hot water pipes, 10in. \times 4in., and one grating in a beam, 3ft. \times 9in.

The permanent inlet ventilation consists of two gratings over hot water pipes, 10in. \times 4in., or 80 sq. in., thus allowing 2.2 sq. in. per head.

The permanent outlet ventilation consists of one grating in beam, 3ft. \times 9in., or 324 sq. in., thus allowing 9 sq. in. per head.

Lighting. The total lighting area is 43 sq. ft., which is equal to one-sixth of the floor space.

The light is from the right.

There are six naked lights.

Room No. 3

Is a boys' class-room, measuring 18ft. 6in. \times 20ft., or 370 sq. ft., and the average number of boys present during September, 1903, was 47, thus allowing 7.9 sq. ft. of floor space per head. The total cubic capacity is 5,303 cubic feet, or 112.8 cubic feet per head.

Ventilation. The ventilation consists of two casement windows, 5ft. 0in. \times 3ft. 1in., and three windows, opening 2ft. \times 3ft.; two inlet ventilators behind hot water pipes, 10in. \times 4in., and one outlet grating in beam, 3ft. \times 9in.

The permanent inlet ventilation consists of two inlet ventilators behind pipes, 10in. \times 4in., or 80 sq. in., thus allowing 1.7 sq. in. per head.

The permanent outlet ventilation consists of one outlet grating, 3ft. \times 9in., or 324 sq. ins., thus allowing 6.9 sq. in. per head.

Lighting. The total lighting area is 65 sq. ft., which is equal to one-fifth of the floor space.

The light is from left and in front.

There are four gas jets for artificial lighting.

GIRLS' DEPARTMENT (First Floor).

There are three rooms used by the girls.

Room No. 1.

This room measures 49ft. 6in. \times 34in., or 1,683 sq. ft., and the average number of girls present during September, 1903, was 133, thus allowing 12.6 sq. ft. of floor space per head. The total cubic capacity is 24,403 cubic feet, or 183.4 cubic feet per head.

Ventilation. The ventilation consists of four casement windows, 9ft. 8in. \times 5ft. 2in.; four windows opening 3ft. 3in. \times 1ft. 9in., and one 3ft. \times 2ft., and two sash windows, 4ft. 0in. \times 1ft. 10in., and four 1ft. 4in. \times 1ft. 10in.; nine ventilating slides, close to floor, 7½in. \times 8in.; four outlets in ceiling, 1ft. 4in. \times 1ft. 4in.; and two open fire-grates, with grating, in the chimney-breast, 9in. \times 9in.

The permanent inlet ventilation consists of six ventilating slides near the floor, 7½in. \times 8in., or 360 sq. in., thus allowing 2.7 sq. in. per head.

The permanent outlet ventilation consists of four outlets in the ceiling, 1ft. 4in. \times 1ft. 4in., and one in chimney-breast, 9in. \times 9in., or 1,105 sq. in., thus allowing 8.3 sq. in. per head.

Lighting. The total lighting area is 231 sq. ft., which is equal to one-seventh of the floor space.

The light is from behind, left, and front.

There are 64 naked gas jets.

Room No. 4

Measures 18ft. \times 17ft., or 306 sq. ft., and the average number of girls present during September, 1903, was 37, thus allowing 8.2 sq. ft. of floor space per head. The total cubic capacity is 4,284 cubic feet, or 115.7 cubic feet per head.

Ventilation. The ventilation consists of two sash windows, 4ft. x 4ft. 10in.; two inlet ventilators, on hot water pipes, 10in. x 4in.; two outlets in wall, 9in. x 6in., and one outlet, 1ft. 4in. x 1ft. 4in., in ceiling.

The permanent inlet ventilation consists of two inlet ventilators close to floor, 10in. x 4in., or 80 sq. in., thus allowing 2.1 sq. in. per head.

The permanent outlet ventilation consists of two outlets in wall, 9in. x 6in., and one in ceiling, 1ft. 4in. x 1ft. 4in. The total area of permanent outlet ventilation is 364 sq. in., or 9.8 sq. in. per head.

Lighting. The total lighting area is 45 sq. ft., which is one-seventh of the floor space.

The light is from the left.

There are six gas jets in this room.

Room No. 3

Measures 21ft. 9in. x 20ft. 9in., or 451 sq. ft., and the average number of girls present during September, 1903, was 43, thus allowing almost 10.5 sq. ft. of floor space per head. The total cubic capacity is 5,637 cubic feet, or 131.0 cubic feet per head.

Ventilation. The ventilation consists of three windows opening 1ft. 9in. x 3ft. 3in.; three inlet ventilators, on hot water pipes, 10in. x 4in.; and two outlets in the ceiling, 1ft. 4in. x 1ft. 4in., and an open fire-grate.

The permanent inlet ventilation consists of three ventilators on hot water pipes, 10in. x 4in., or 120 sq. in., thus allowing nearly 2.8 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the ceiling, 1ft. 4in. x 1ft. 4in., or 512 sq. in., thus allowing 11.9 sq. in. per head.

Lighting. The total lighting area is 68 sq. ft., which is equal to one-sixth of the floor space.

The light is from left and behind.

There are six naked lights.

INFANTS' DEPARTMENT.

The infants' department is on the ground floor, in the new building. There are three rooms.

Room No. 4

Is the infants' large class-room measuring 43ft. \times 24ft., or 1,032 sq. ft., and the average number of infants present during June, 1903, was 73, thus allowing 14.1 sq. ft. of floor space per head. The total cubic capacity is 14,448 cubic feet, or 197.9 cubic feet per head.

Ventilation. The ventilation consists of two casement windows, 5ft. 0in. \times 4ft. 0in.; six windows opening 1ft. 6in. \times 1ft. 0in.; eight ventilating slides, near the floor, 10in. \times 4in.; six outlets, 12in. \times 12in., in walls near to ceiling; and two in beams, 12in. \times 9in.

The permanent inlet ventilation consists of eight ventilating slides, in walls near the floor, 10in. \times 4in.

The total area of permanent inlet ventilation is 320 sq. in., or 4.3 sq. in. per head.

The permanent outlet ventilation consists of six gratings, 12in. \times 12in., and two 12in. \times 9in., or 1,080 sq. in., or 14.8 sq. in. per head.

Lighting. The total lighting area is 148 sq. ft., which is equal to one-seventh of the floor space.

The light is from the right and behind.

There are 16 naked gas lights for artificial lighting.

Room No. 5

Measures, 20ft. \times 24ft., or 480 sq. ft., and the average number of infants present during June, 1903, was 61, thus allowing 7.8 sq. ft. of floor space per head. The total cubic capacity is 6,720 cubic feet, or 110.1 cubic feet per head.

Ventilation. The ventilation consists of two casement windows, 5ft. 0in. \times 1ft. 8in., and two windows opening 1ft. 0in. \times 1ft. 6in.; three ventilating slides, on hot water pipes, 10in. \times 4in.; two gratings, 12in. \times 12in.

The permanent inlet ventilation consists of three slides on pipes, 10in. \times 4in., or 120 sq. in., thus allowing 1.9 sq. in. per head.

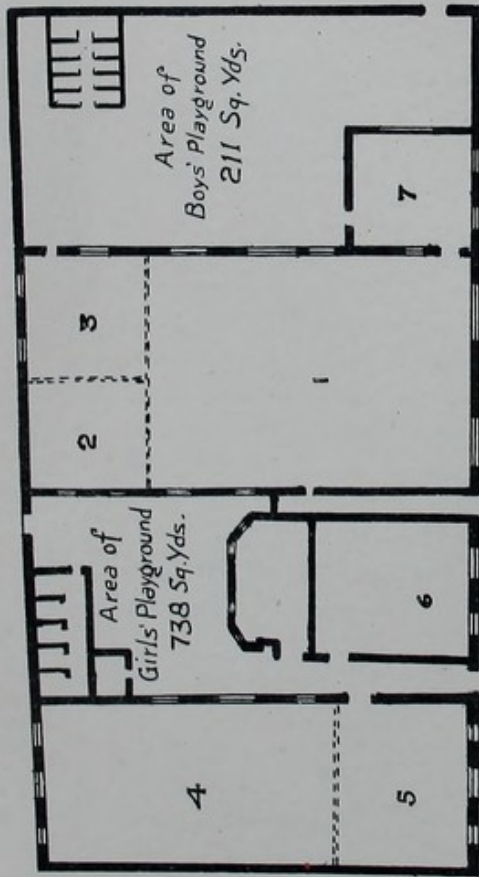
The permanent outlet ventilation consists of two gratings, in wall close to ceiling, 12in. \times 12in., 288 sq. in., thus allowing 4.7 sq. in. per head.

Lighting. The total lighting area is 74 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left.

There are eight naked lights.

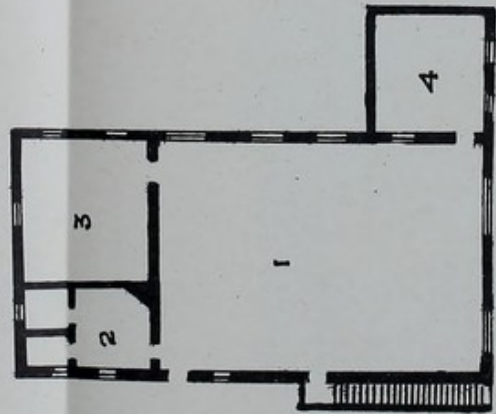
— ST. MARY'S DEAN ST. —



GROUND PLAN

Scale 30 feet to 1 inch

Room marked.	Average height.	Cubic feet.
1	6" x 34' 0" x 14' 4" =	24123
2	0" x 18' 0" x 14' 4" =	3870
3	6" x 20' 0" x 14' 4" =	5303
4	0" x 24' 0" x 14' 0" =	14448
5	20' 0" x 24' 0" x 14' 0" =	6720
6	23' 10" x 19' 9" x 14' 0" =	6589
7	17' 10" x 17' 0" =	



FIRST FLOOR.

1	49' 6" x 34' 0" x 14' 6" =	24403
2	11' 1" x 12' 6" x 12' 6" =	1731
3	21' 9" x 20' 9" x 12' 6" =	5637
4	17' 0" x 18' 0" x 14' 0" =	4284



Room No. 6

Is the babies' room, measuring 23ft. 10in. \times 19ft. 9in., or 470 sq. ft., and the average number of infants present during June, 1903, was 57, thus allowing 8.2 sq. ft. of floor space per head. The total cubic capacity is 6,589 cubic feet, or 115.5 cubic feet per head.

Ventilation. The ventilation consists of two casement windows, 5ft. 0in. \times 1ft. 8in., and two window openings, 1ft. 0in. \times 1ft. 6in., and two circular inlets close to floor, 8in. in diameter; three outlets, 12in. \times 12in., and two 9in. \times 9in.

The permanent inlet ventilation consists of three gratings, 6in. \times 3in., or 54 sq. in., thus allowing .9 sq. in. per head.

The permanent outlet ventilation consists of two outlets, 12in. \times 12in., and two 9in. \times 9in. The total area of permanent outlet ventilation is 450 sq. in., thus allowing 7.8 sq. in. per head.

Lighting. The total lighting area is 62 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left.

There are six gas jets in this room for artificial lighting.

Recommendations.

- I. To construct sanitary urinals for the boys.
- II. To abolish the pan closet in the girls' room, substituting a pedestal closet of approved type.
- III. To provide inlet ventilation openings in rooms No. 3 (boys', ground floor), No. 2 (girls', first floor), and No. 6, infants', ground floor.
- IV. To arrange that rooms Nos. 2 and 3, boys' (ground floor), No. 4 (girls', first floor), and Nos. 5 and 6, infants' (ground floor), shall not contain at one time more than 27, 37, 30, 53, and 52, respectively.

ST. LUKE'S SCHOOL.

This school was built in 1855, and is a two storey building of stone. It is in good condition, and is situated in Duckworth Street.

Playgrounds.

There are two playgrounds. The girls' playground measures 589 sq. yds. The surface is well flagged and slopes towards a surface gully in the centre of the yard.

The boys' playground measures 1,871 sq. yds. The surface is partly flagged, paved, and unpaved. The portion flagged adjoins the side of the school, and is 3 yds. wide; the portion paved is immediately beyond the flagged portion, and the part unpaved is near the railway siding. The surfaces are in fair condition.

At the back of the school, adjoining the girls' playground and Duckworth Street, there is an open passage which was formerly asphalted, but is now out of repair.

Sanitary Conveniences.

Boys: The boys' sanitary conveniences consist of five compartments and one for the teachers, on the McFarlane's iron trough system, and are situated in the boys' playground, behind Duckworth Street. Each compartment is 3 ft. 6in. from door to seat-board, and 2ft. wide. There is a passage in front of the compartments 4ft. wide, open to the external air.

There are 3 linear feet of urinals, with stone sides, and the backs are composed of bricks. They are hand-flushed. The floors are flagged, and a channel has been formed to a trapped gully.

The girls' sanitary conveniences consist of nine compartments on the earthenware trough system. Each compartment measures 2ft. 6in. from door to seat-board, and is 1ft. 10in. wide. In front of the compartments is a passage 3ft. 2in. wide, not open to the external air above.

The floors of the compartments are flagged, and lead to a trapped gully.

The compartments are well lighted and ventilated.

The conveniences are flushed twice a day by an automatic flushing cistern.

Drainage.

The downspouts are connected, and the waste pipes are not trapped. There is a gully inside the lavatory room in the infants' department.

Cloak-Room.

The infants' cloak-room is situated at the west end of the school, under the staircase. It measures about 6ft. \times 9ft., and is lighted from the staircase window. The room ventilates into the staircase. There are about 130 hooks fixed on the walls. This cloak-room is not warmed.

Clothes belonging to the infants are also hung in a passage under the east staircase.

The cloak-room for the mixed department is at the west end of the mixed schoolroom, on the first floor, and is in direct communication with the schoolroom. It measures 7ft. \times 7ft., and is lighted by two windows, 3ft. 9in. \times 2ft. 6in. + 4ft. 3in., of which 2ft. \times 1ft. 6in. will open. There are about 60 hooks on the walls. The floor is boarded, and the room is not heated.

There is also a cloak-room for girls on the first flight of the west staircase, measuring 9ft. 6in. \times 4ft. It has one window, 6ft. \times 4ft., one pane of which will open. The floor is boarded, and the walls are boarded also up to 4ft. from the floor, and above this painted green and yellow. There are 79 hooks on the walls. This room is about 20ft. high.

Lavatory Accommodation.

There is an iron lavatory basin in the small room adjoining the infants' large schoolroom, the waste pipe of which is not trapped, and discharges over a gully inside. The room is lighted by a small window, 1ft. 6in. \times 1ft. 6in., and is ventilated by a perforated zinc opening, 1ft. 4in. \times 1ft. 2in.

There is an iron lavatory basin in the cloak-room upstairs, the waste pipe of which is not trapped, and discharges over a downspout hopper head outside.

Heating.

The heating is carried out by means of hot water pipes.

Floors.

The floors are constructed of tongued and grooved boards with a ventilated cavity underneath. The floors in the infants' department are out of repair. They are swept every night and washed once a year.

Walls.

The walls are boarded round the school to a height of 5ft. from the ground; above this height they are rendered with plaster, and

painted pale green to a height of 5ft., and above they are a stone colour.

Staircases.

There are two staircases; one on the west side of the school, and one on the east side.

The east staircase is lighted by a window 6ft. 6in. \times 4ft. 6in. on the first flight, and on the second flight by a window 4ft. 6in. \times 4ft. 6in. + 1ft. 6in. \times 1ft. 6in.

Both staircases are constructed of stone steps; there are two flights and a handrail.

The west staircase is lighted by one large window, 10ft. \times 9ft. 6in., two panes of which will open 1ft. 6in. \times 1ft. 3in.

GROUND FLOOR.

The ground floor is used by the infants' department, and contains three rooms used for teaching.

Room No. 1.

This is the large room, measuring 60ft. \times 30ft., or 1,800 sq. ft. The average number of children present during June, 1903, was 105, thus allowing 17.1 sq. ft. of floor space per head. The total cubic capacity is 24,750 cubic feet, or 235.7 cubic feet per head.

Ventilation. The ventilation consists of eight hopper windows, 6ft. from the floor, 1ft. 6in. \times 1ft. 6in., and eight windows opening 10in. \times 1ft. 6in. at the top; four air shafts, 6in. \times 6in., in the wall at opposite ends of the room, which are carried to revolving cowls on the roof.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of four air shafts, or 144 sq. in., thus allowing 1.3 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 234 sq. ft., which is equal to one-seventh of the floor space.

The light is from behind and the front.

There are 12 gas jets.

Room No. 2.

This is an infants' class-room, measuring 21ft. \times 18ft. 5in., or 386 sq. ft., and the average number present during June, 1903, was 30, thus allowing 12.8 sq. ft. of floor space per head. The total cubic capacity is 5,224 cubic feet, or 174.1 cubic feet per head.

Clothes are hung in this room.

Ventilation. The ventilation consists of four hopper windows 1ft. 6in. \times 9in., 6ft. and 11ft. from the floor, and one window opening into a porch, 1ft. 2in. \times 3ft. 2in.; one Tobin's tube, 11in. \times 4in., 5ft. 10in. from the floor, and one outlet in the wall near the ceiling, 12in. \times 10in.

The permanent inlet ventilation consists of the Tobin's tube, or 44 sq. in., thus allowing 1.4 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the wall, near the ceiling, or 120 sq. in., thus allowing 4 sq. in. per head.

There is slight cross ventilation.

Lighting The total lighting area is 66 sq. ft., which is one-sixth of the floor space.

The light is from behind and very slightly from the front.

Room No. 3.

This is the babies' room, measuring 30ft. \times 20ft., or 600 sq. ft. The average number present during June, 1903, was 26, thus allowing 23 sq. ft. of floor space per head. The total cubic capacity is 8,000 cubic feet, or 307.6 cubic feet per head.

Ventilation. The ventilation consists of eight hopper windows, 1ft. 6in. \times 9in., 6ft. and 11ft. from the floor; four Tobin's tubes, 11in. \times 4in., 6ft. from the floor, and two outlets in the wall, near the ceiling, 9in. \times 6in., leading to a revolving cowl on the roof.

The permanent inlet ventilation consists of four Tobin's tubes, or 176 sq. in., thus allowing 6.7 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the ceiling, or 108 sq. in., thus allowing 4.1 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 107 sq. ft., which is nearly one-sixth of the floor space.

The light is from behind, left, and front.

There are eight gas jets.

FIRST FLOOR.

There are three rooms on this floor used for teaching.

Room No. 6.

This room measures 30ft. \times 20ft., or 600 sq. ft., and the average number of children present during September, 1903, was 59, thus allowing 10.1 sq. ft. of floor space per head. The total cubic capacity is 9,750 cubic feet, or 165.2 cubic feet per head.

Ventilation. The ventilation consists of eight hopper windows with openings measuring 1ft. 6in. \times 9in., 6ft. and 11ft. from the floor; four Tobin's tubes, 11in. \times 4in., at a height of 5ft. 6in. from the floor; one outlet in the ceiling leading to a revolving cowl, 2ft. \times 2ft.; one outlet in the east wall, 12in. \times 9in., and one in the west wall, 2ft. \times 1ft.

The permanent inlet ventilation consists of four Tobin's tubes, or 176 sq. in., thus allowing 2.9 sq. in. per head.

The permanent outlet ventilation consists of one opening in the ceiling, one outlet in the west wall, and one outlet in the east wall. The total area of permanent outlet ventilation is 972 sq. in., thus allowing 16.4 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 133 sq. ft., or one-fourth of the floor space.

The light is from behind, right, and left.

There are eight naked gas jets.

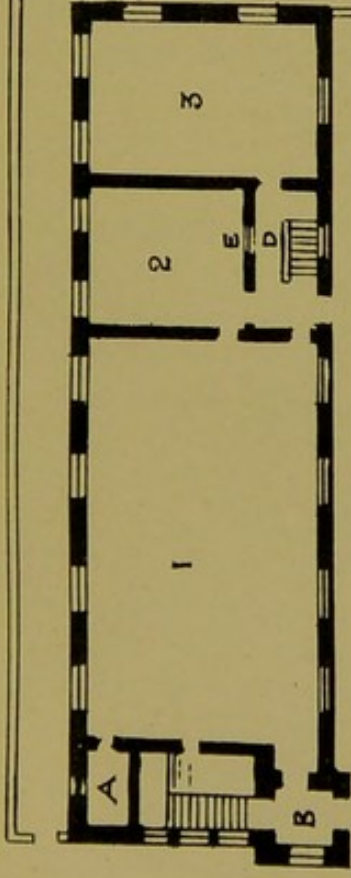
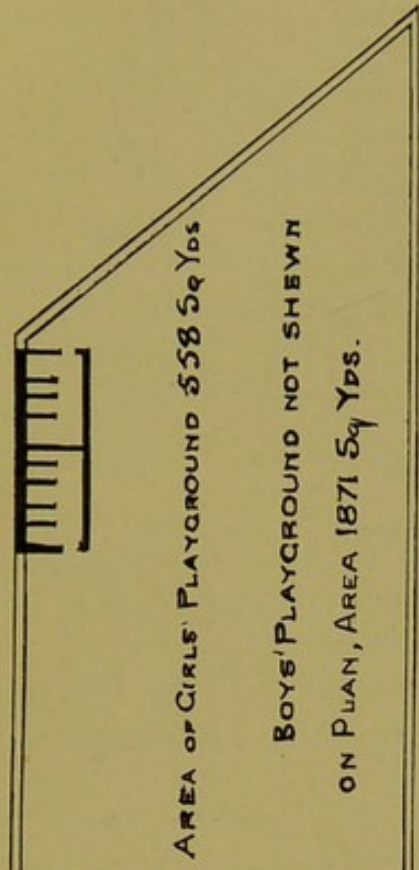
Room No. 5.

This room measures 21ft. \times 19ft. 6in., or 409 sq. ft., and the average number of children present during September, 1903, was 56, thus allowing 7.3 sq. ft., of floor space per head. The total cubic capacity is 6,654 cubic feet, or 118.8 cubic feet per head.

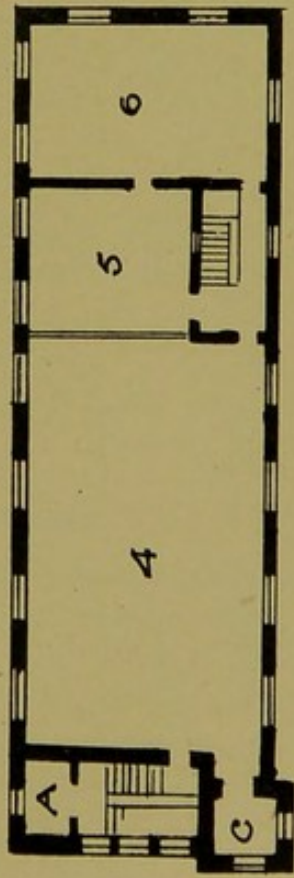
This room is divided from room No. 4 by a glazed partition.

Ventilation. The ventilation consists of four hopper windows two opening at a height of 6ft. from the floor, and two at the top; one window opening into the staircase, 3ft. 2in. \times 1ft. 7in.; one Tobin's tube, 11in. \times 4in., 5ft. 10in. from the floor; one outlet in the wall leading to a revolving shaft on the roof, 2ft. \times 1ft.; and one circular opening over the gas pendant, 12in. in diameter.

The total area of permanent inlet ventilation is 44 sq. in., thus allowing .8 sq. in. per head, and probably there is an opening over the gas.



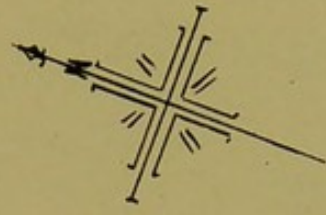
GROUND PLAN



FIRST FLOOR

ST. LUKE'S SCHOOL

Scale 30 feet to 1 inch



Room marked	Average height.	Cubic feet.
1	30' 0" x 60' 0" x 13' 9"	= 24750
2	21' 0" x 18' 5" x 13' 6"	= 5324
3	30' 0" x 20' 0" x 13' 4"	= 8000
4	30' 0" x 60' 0" x 19' 0"	= 34200
5	21' 0" x 19' 6" x 16' 3"	= 6654
6	30' 0" x 20' 0" x 16' 3"	= 9750

Cloak Rooms Lettered A B C D.



The total area of permanent outlet ventilation is 401 sq. in., thus allowing 7.1 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area of this room is 49 sq. ft., which is equal to one-eighth of the floor space.

The light is from the left.

There are ten gas jets.

A glazed partition divides this room from the large room.

Room No. 4.

This is the large room, measuring 30ft. \times 60ft., or 1,800 sq. ft., and the average number of children present during September, 1903, was 156, thus allowing 11.5 sq. ft. of floor space per head. The total cubic capacity is 34,200 cubic feet, or 219.2 cubic feet per head.

This room is divided into three by curtains.

Ventilation. The ventilation consists of eight hopper windows with openings 1ft. 10in. \times 1ft. 2in., and eight windows opening on hinges, 1ft. 10in. \times 1ft. 2in., at the top; 12 outlets in the ceiling, 6in. in diameter, and 32 outlets in the ceiling, 6in. \times 3in., directly over the gas pendants.

There are no permanent inlet ventilators.

The total area of permanent outlet ventilation is 912 sq. in., thus allowing 5.8 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 198 sq. ft., which is equal to one-ninth of the floor space. Seven of these windows, 5ft. 2in. \times 2ft. 3in., are lead lights.

The light is from the left and right.

There are 48 naked gas jets.

The glass is semi-transparent.

Recommendations.

- I. Room No. 5 should not contain more than 40 scholars.
- II. Sufficient permanent ventilation openings should be provided where necessary.
- III. The lighting in Rooms 4 and 5 should be improved.
- IV. It is desirable that the sanitary conveniences should be placed upon a modern system, and that the urinal for boys should be made impervious.

- V. The provision of more suitable cloak-room accommodation should be considered.
- VI. The gully in the lavatory room near the infants' large room should be removed.
- VII. The floors of the infants' department should be repaired.

PARK ROAD MIXED AND INFANT SCHOOL.

This school was erected in 1850, and is a two-storey building of stone.

The ground floor is occupied partly by the infants and partly by the mixed department.

Playgrounds.

There are two playgrounds, one for the boys, and one for the girls and infants, separated by a stone wall and railings.

The boys' playground measures 816 sq. yds., and the girls' 680 sq. yds. Both playgrounds are asphalted. There is no covered playground.

Sanitary Conveniences.

The sanitary conveniences are of the trough type, and there are two sets,—one for the boys at a distance of 25 yards from the school, and one for the girls and infants, at a distance of 15 yards from the school.

The set for the boys is the McFarlane's iron type, the trough being filled with water once a day and then emptied by means of a plug. There are four compartments and a stone urinal, 12 linear feet. The conveniences measure 3ft. 6in. \times 2ft., and the passage in front measures 3ft. 6in. in breadth and 8ft. in height, and is open at the top.

The set for the girls is partly McFarlane's type (four) and partly the tippler type (three). There are seven compartments, and each measures 3ft. 6in. \times 2ft. 3in., the passage in front being 4ft. wide and 8ft. high, and open at the top.

There are two pedestal w.c.'s for the male and female teachers. The one for the males is situated under the school, and is lighted by a window in the door, and the one for the female teachers adjoins the girls' cloak-room.

Cloak-Rooms.

There are two cloak-rooms for the mixed department—one for the boys and one for the girls.

The boys' cloak-room is situated near the entrance of the stairs leading to the boys' schoolroom, marked No. 4 on the plan. It measures 16ft. 9in. \times 12ft. 4in.; the floor and roof are of concrete and it is lighted by means of three windows, 3ft. \times 2ft. 9in., one of which will open. There is no heating in this room. There are 72 pegs and five white enamelled lavatory basins, the waste pipe discharging over a gully outside.

The girls' cloak-room, No. 10, is situated at the entrance leading to the girls' school. It measures 22ft. 9in. \times 16ft. 9in. The floor is concreted, and the room is lighted by means of eight windows, 2ft. 6in. \times 2ft. 3in., four of which will open as casements. There are six white enamelled lavatory basins in this room, the waste pipe discharging over a gully outside. There are no heating arrangements in this room. There are 108 pegs.

Dry Refuse.

The dry refuse is stored in a covered brick receptacle (the roof is out of repair) adjoining the girls' conveniences.

Walls.

The internal walls are plastered and painted brown to a height of 4ft. from the floor, and the remainder painted green.

Floors.

The floors of the rooms on the first storey are tiled, and out of repair, and on the second storey they are boarded. They are swept daily and washed three times a year.

Lighting.

The glass in the windows is semi-transparent, and there are small diamond panes in two windows on the ground floor, and also in a small portion at the top of all the other windows.

The partitions between the class-rooms are of wood and glass.

Heating.

The heating is by means of hot water pipes carried along the walls.

Staircases.

There are two staircases—one of concrete and one of stone—well lighted.

INFANTS' DEPARTMENT.

Cloak-Room.

The cloak-room for the infants is situated near the main entrance, and is 17ft. \times 14ft.

This room is lighted by a window 7ft. \times 3ft. 6in., part of which opens as a casement. There are 144 pegs arranged on the walls, and on two racks.

This room is heated by hot water pipes, and ventilated by an opening in the wall, 5in. \times 3in.

GROUND FLOOR.—Room No. 1.

This room measures 21ft. 9in. \times 13ft. 3in., or 288 sq. ft., and the average number present during July, 1903, was 25, thus allowing 11.5 sq. ft. of floor space per head.

The total cubic capacity is 4,322 cubic feet, or 172.8 cubic feet per head.

Ventilation. The ventilation consists of one hopper and two swivel windows, about 7ft. from the floor, and three openings in the wall, 5in. \times 3in.

There is no permanent inlet ventilation, and the total permanent outlet ventilation consists of the three openings in the wall, or 45 sq. in., thus allowing 1.8 sq. in. per head.

Lighting. The total lighting area measures 63 sq. ft., or about one-fourth of the floor space.

The light is received from right, left, and behind.

Room No. 2.

This room measures 48ft. \times 38ft., or 1,824 sq. ft., and the average number of children present during July, 1903, was 152 thus allowing 12 sq. ft. per head.

The total cubic capacity is 27,360 cubic feet, or 180 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, three swivel windows, and two casement windows, two gratings in the wall which ventilate into Room No. 1 on first floor, and one opening in the wall, 5in. \times 3in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one opening in the wall, or 15 sq. in., thus allowing .1 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 147 sq. ft., or about one-twelfth of the floor space.

The light is received from the right and left.

There is one opening, 1ft. 6in. \times 1ft. 6in. in the floor of this room, covered by an iron grating, and leading to the heating apparatus in the cellar.

Room No. 2a.

This room measures 18ft. \times 21ft., or 378 sq. ft., and the average number of infants present during July, 1903, was 52, thus allowing 7.2 sq. ft. per head.

The total cubic capacity is 5,670 cubic feet, or 109 cubic feet per head.

Ventilation. There are two swivel windows.

There are no permanent inlet and outlet ventilation openings.

Lighting. The total lighting area measures 42 sq. ft., or one-ninth of the floor space.

The light is received from the left.

Room No. 7.

This room is used by the mixed department and measures 33ft. 9in. \times 21ft. 3in., or 717 sq. ft., and the average number present during September, 1903, was 58 thus allowing 12.3 sq. ft. per head.

The total cubic capacity is 10,398 cubic feet, or 179.2 cubic feet per head.

Ventilation. The ventilation consists of one hopper and two swivel windows.

There are no permanent inlet and outlet ventilation openings.

Lighting. The total lighting area measures 84 sq. ft., or one-eighth of the floor space.

The light is received from behind and the right.

There is a lavatory partitioned off this room which contains a white enamelled sink (for the use of tea meetings), the waste pipe of which discharges over a gully outside.

Room No. 8.

This room measures 33ft. 9in. \times 17ft., or 573 sq. ft., and the average number present during September, 1903, was 44 thus allowing 13 sq. ft. per head.

The total cubic capacity is 8,319 cubic feet, or 189 cubic feet per head.

Ventilation. The ventilation consists of two swivel and one hopper window, and one outlet ventilator in the wall, 12in. \times 12in.

There is a fire-place in this room which is not used for heating purposes, and which is covered over.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one outlet in the wall, or 144 sq. in., thus allowing 3.2 sq. in. per head.

Lighting. The total lighting area measures 84 sq. ft., or one-seventh of the floor space.

The light is received from left and behind.

FIRST FLOOR.—Room No. 1.

This room measures 44ft. \times 38ft., or 1,672 sq. ft., and the average number present during September, 1903, was 110, thus allowing 15.2 sq. ft. of floor space per head.

The total cubic capacity is 50,160 cubic feet, or 456 cubic feet per head.

Ventilation. The ventilation consists of three window hoppers opening 14in. \times 6in., 6ft. from the floor, two swivel and two casement windows.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of two outlets in the ceiling, 2ft. \times 2ft. (leading to Boyle's ventilator on roof) and one outlet in the wall, 12in. \times 4in. The total area of permanent outlet ventilation is 1,200 sq. in., thus allowing 10.9 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 135 sq. ft., or one-twelfth of the floor space.

The light is received from left and right.

Room No. 3.

This room measures 21ft. 9in. \times 13ft. 3in., or 288 sq. ft., and the average number present during September, 1903, was 20, thus allowing 14.4 sq. ft. of floor space per head.

The total cubic capacity is 5,763 cubic feet, or 288.1 cubic feet per head.

Ventilation. The ventilation consists of two windows one as a hopper, and one as a casement, and one window which ventilates into room No. 1.

There is no permanent inlet or outlet ventilation.

Lighting. The total lighting area measures 63 sq. ft., or one-fourth of the floor space.

The light is received from behind.

Room No. 5.

This room measures 38ft. \times 34ft., or 1,292 sq. ft., and the average number present during September, 1903, was 103, thus allowing 12.5 sq. ft. of floor space per head.

The total cubic capacity is 38,760 cubic feet, or 376.3 cubic feet per head.

Ventilation. The ventilation consists of six windows made to open, two on swivels, one as a hopper, one on hinges, and two casements, and one outlet ventilator, 2ft. \times 2ft., leading to Boyle's cowl on roof.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of one outlet in the roof, or 576 sq. in., thus allowing 5.6 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 120 sq. ft., or one-tenth of the floor space.

The light is received from right, left, front and back, and the room is well lighted.

Room No. 7.

This room measures 30ft. 3in. \times 22ft. 4in., or 675 sq. ft., and the average number present during September, 1903, was 65, thus allowing 10.3 sq. in. of floor space per head.

The total cubic capacity is 9,458 cubic feet, or 145.5 cubic feet per head.

Ventilation. The ventilation consists of one casement and two swivel windows.

There is no permanent inlet or outlet ventilation.

Lighting. The total lighting area measures 94 sq. ft., or one-seventh of the floor space.

The light is received from the right and behind.

At one end of the passage, marked No. 6 on plan, there is a slop-sink partitioned off.

Recommendations.

- I. To reconstruct the McFarlane's trough sanitary conveniences.
- II. To heat the cloak-rooms.
- III. To repair the floor of the infants' department.
- IV. To improve the ventilation openings where necessary.

WITTON (Infants).

This school was erected in 1825, and enlarged in 1856, and is situated in Redlam, Witton. It is constructed of stone, and is in good condition.

Playground.

There is one playground, which measures 778 sq. yds. The surface is partly asphalted, but is out of repair. The yard surface slopes from the school; there are no surface gullies, and the water falls to the lower end of the yard, where it lodges.

Sanitary Conveniences.

The sanitary conveniences originally were tub closets; but have recently been converted to the fresh water system.

The conveniences are on the hopper type. Each is connected to one common pipe under the hoppers, the main pipe is syphoned-trapped, and each basin is flushed separately once a day. There is an automatic cistern which flushes the whole series of closets, and which is placed in the centre.

Each compartment measures, 3ft. 0in. from door to seat-board, and is 2ft. 4in. wide, and 10ft. high. The compartments are lighted by two windows over the doors, 2ft. 1in. \times 10in., and ventilated by four circular holes in each door, 1½in. in diameter; also the doors have been left short at the bottom.

There is a passage in front of the compartments 5ft. wide, open to the external air above, and the face wall is 7ft. 6in. high. This passage is well flagged and slopes to a channel leading to a properly trapped gully.

There are 9 linear feet of urinals for the boys in the passage in front of their compartments. The back of the urinal is rendered with

cement to a height of 4ft. from the ground, made smooth and impervious. This urinal is flushed once a day by a perforated pipe placed round the back. The floor is well-flagged, and a channel has been formed leading to a properly trapped gully.

There are four conveniences for the girls, and two for the boys.

There is a drain ventilating pipe carried above the ridge of the conveniences.

Drainage

The drains were re-laid when the closets were converted. They discharge through a chamber, and thence into the sewer in the back-road. The downspouts discharge over gullies.

Refuse

There are two ash receptacles; one adjoining the boys' conveniences, and one adjoining the girls'. There is a flagged cover over each ash-tub.

Cloak-Room.

The cloak-room is entered from the porch in the yard at the west end of the school, and from inside through a passage leading from the large room, No. 3.

The cloak-room measures 19ft. 4in. \times 11ft. 6in., and is lighted by two sash windows, 4ft. 4in. \times 2ft. 0in.

There are about 110 hooks placed against the walls.

The floor is constructed of tongued and grooved boards, with a ventilated cavity underneath.

The walls are plastered and painted the same colour as the school-rooms.

There is a fire-place in this room without guard.

Lavatory Accommodation.

There is a white glazed sink placed in the passage between the cloak-room and the schoolrooms. There is a window immediately over the sink, the upper part of which will open.

Heating.

The heating is carried out by means of hot water pipes. One set of pipes passes beneath the floor at one side of the room, over which there are five perforated gratings in the floor, 2ft. 8in. \times 1ft. 6in.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath.

As previously stated, there are five perforated gratings in the floor of the large room, 2ft. 8in. \times 1ft. 6in.

The floors are swept daily and washed twice a year.

Walls.

The walls are boarded to a height of 3ft. 3in. from the floor; above this height they are stone, and painted dark green to a height of 2ft. 4in., and the remainder pea green.

The walls require re-painting.

Room No. 2.

This room measures 33ft. 6in. \times 20ft. 10in., or 697 sq. ft. The average number present during June, 1903, was 22.4,—7.9 being males, and 14.5 females,—thus allowing 31.1 sq. ft. of floor space per head. The total cubic capacity is 9,769 cubic feet, or 436.1 cubic feet per head.

This room is separated from the large room by roller shutters, in two of which is fixed a window.

Ventilation. The ventilation consists of three hinge windows, 2ft. 0in. \times 1ft. 6in., opening at a height of 9ft. 6in. from the floor; two Tobin's tubes, 9in. \times 4in., opening six feet from the floor, and three outlets in the ceiling, two leading to a cowl in the roof, two of the three measuring 1ft. 3in. \times 1ft. 3in., and one 1ft. 6in. \times 1ft. 0in.

The permanent inlet ventilation consists of two Tobin's tubes, or 72 sq. in., thus allowing 3.2 sq. in. per head.

The permanent outlet ventilation consists of three outlets in the ceiling, or a total of 666 sq. in., thus allowing 29.7 sq. in. per head.

Lighting. There are four windows in this room, and the glass is thick and semi-transparent. The total lighting area is 94 sq. ft., or one-seventh of the floor space.

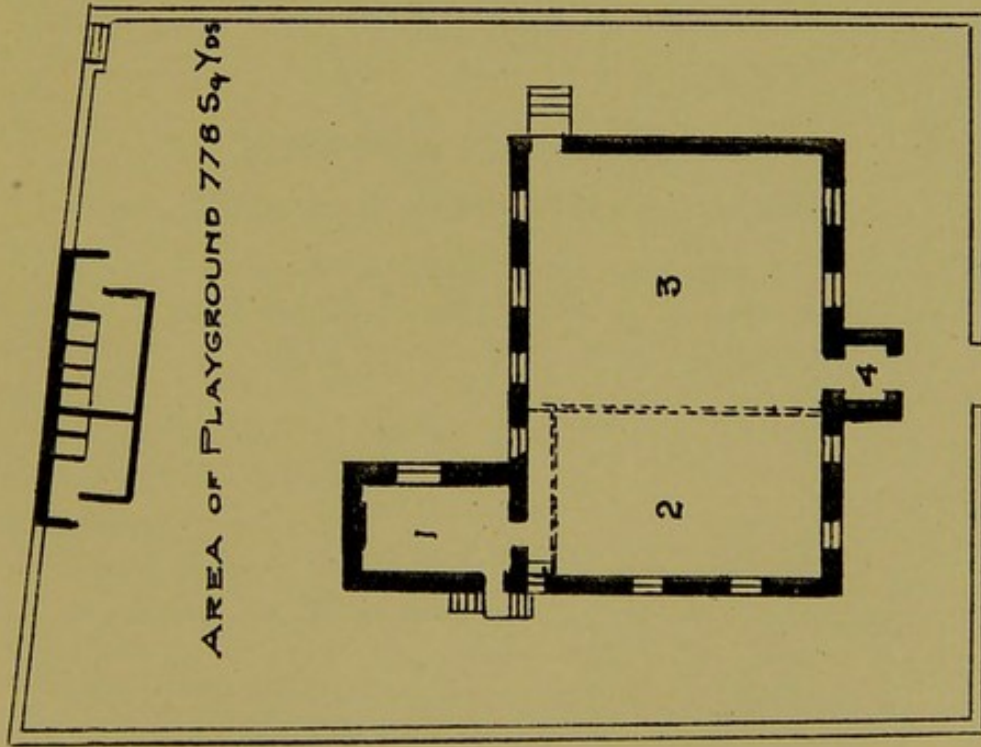
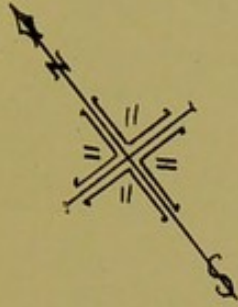
The light is received from the left and front.

There are four gas jets.

Room No. 3.

This is the large room, which measures, 36ft. 10in. \times 32ft. 0in., or 1,178 sq. ft. The average number present during June, 1903, was 72.6,—33.5 being males, and 39.1 being females, thus allowing 16.2 sq. ft. of floor space per head. The total cubic capacity is 16,501 cubic feet, or 227.2 cubic feet per head.

WITTON INFANTS' SCHOOL



REDLAM

Scale 50 feet to 1 inch

Room marked	Average height.	Cubic feet.
1	4" x 11' 6" x 10' 6" =	2334
2	6" x 20' 10" x 14' 0" =	9769
3	36' 10" x 32' 0" x 14' 0" =	16501
4	7' 10" x 5' 6"	



Ventilation. The ventilation consists of six hopper windows, at a height of 9ft. 6in. from the floor, 2ft. 0in. \times 1ft. 0in.; two Tobin's tubes, 9in. \times 4in., at a height of 6ft. from floor; and two outlets in the ceiling, 1ft. 3in. \times 1ft. 3in., leading to cowls on the roof.

The permanent inlet ventilation consists of two Tobin's tubes, or 72 sq. in., thus allowing 1 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the ceiling, or 450 sq. in., thus allowing 6.1 sq. in. per head.

Lighting. The total lighting area is 117 sq. ft., which is equal to one-tenth of the floor space.

The light is received from the left, right, and very slightly from the front.

There are five windows in this room, and the glass in three is thick and semi-transparent.

There are 12 gas jets.

Recommendations.

- I. To provide racks and a fire-guard in the cloak-room.
- II. To flag the surface of the playground.

GRIFFIN SCHOOL.

(Boys, Girls and Infants' Departments.)

This school was erected in 1870, and has been enlarged five times since then. It is situated at the junction of Avondale Street and Portland Street. It is built of stone, and is partly a two-storey building.

There are Boyle's ventilators on the roof and louvred openings at the gable-end, to aid ventilation.

Playgrounds.

There are two playgrounds,—one for boys, measuring 327 sq. yds., and one for girls and infants, measuring 298 sq. yds., separated from each other.

Both playgrounds are well flagged and paved. No portion is under cover.

Sanitary Conveniences

The sanitary conveniences are situated under class-room No. 9, and consist of earthenware troughs.

There are three seat-boards for boys, and a separate compartment for the male teachers. There are also 6 linear feet of urinal accommodation for the older boys, and 3ft. 6in. for infant boys.

There are five seatboards for the girls and infants, and a separate compartment for the female teachers.

These conveniences are flushed four times a day.

Dry Refuse.

The dry refuse is stored in two ash-tubs under a stone receptacle adjoining the girls' conveniences.

Staircase.

There is a stone staircase of three flights leading up to room No. 8, with handrail.

Walls.

The internal surfaces of the walls are plastered and coloured grey, and in some of the rooms the walls are boarded to a height of 4ft. 6in. from the floor, and in room No. 8, the walls are constructed of salt glazed bricks to a height of 3ft. 10in. from the floor.

Floors.

The floors are constructed of wooden blocks. They are swept daily and washed six or seven times a year.

Cloak-Rooms.

The girls' cloak-room measures, 30ft. x 10ft. It is lighted by three skylights and one window, two of which will open. The walls are constructed of glazed bricks, the floor of concrete, and there are 223 pegs, numbered and fixed against the walls. The floor of this cloak-room is 2ft. below the passage outside. There are 37 pegs on a landing outside No. 10 room, and 63 pegs on one rack and against the walls in the passage between No. 2 room and No. 6 room.

Lavatory Accommodation

There is one lavatory basin outside the passage of No. 5 room, and there are two lavatory basins in the girls' cloak-room.

Heating.

The heating of the rooms is carried out by means of hot water pipes.

Lighting.

The glass in the windows was formerly frosted, but this has been recently replaced for the most part by transparent glass.

BOYS' DEPARTMENT.

This department consists of one large room divided into two parts by a wooden and glass partition, and three class-rooms, two on the ground floor and one on the first floor.

Room No. 3.

This room measures 27ft. 3in. \times 18ft. 4in., or 499 sq. ft., and the average number of children present during September, 1903, was 32, thus allowing 15.6 sq. ft., of floor space per head. The total cubic capacity is 8,492 cubic feet, or 265.3 cubic feet per head.

Ventilation. The ventilation consists of four hopper windows, which have been recently fixed, three windows opening on hinges, two Sherringham valves, 16in. \times 9in., 9ft. from floor, and two openings in the ceiling, 4ft. \times 1ft.

The total permanent inlet ventilation consists of two Sherringham valves, 288 sq. in. in area, thus allowing 9 sq. in. per head.

The total permanent outlet ventilation consists of two outlets in ceiling, 1,152 sq. in. in area, thus allowing 36 sq. in. per head.

Lighting. The total lighting area measures 116 sq. ft., or one-fourth of the floor space.

The light is received from the right, behind, front, and indirectly from the left.

The artificial light is by gas.

Room No. 4.

This room measures 1,183 sq. ft., and the average number of children present during September, 1903, was 63, thus allowing 18.7 sq. ft. of floor space per head. The total cubic capacity is 20,029 cubic feet, or 317.7 cubic feet per head.

Ventilation. The ventilation consists of three windows, opening on hinges; two Sherringham valves, 16in. \times 9in., 9ft. from floor, and three outlets in the ceiling, 4ft. \times 1ft.

The permanent inlet ventilation consists of two Sherringham valves 288 sq. in. in area, thus allowing 4.5 sq. in. per head.

The permanent outlet ventilation consists of three outlets in ceiling 1,728 sq. in. in area, thus allowing 27.4 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 115 sq. ft., or one-tenth of the floor space.

The light is received chiefly from the front and behind, and indirectly from the right, through the glass partition.

Room No. 5.

This room measures 26ft. 6in. \times 15ft. 6in., or 410 sq. ft., and the average number of children present during September, 1903, was 32, thus allowing 12.8 sq. ft. of floor space per head.

The total cubic capacity is 4,997 cubic feet, or 156.1 cubic feet per head.

Ventilation. The ventilation consists of four windows opening on hinges, four Sherringham valves, 13in. \times 9in. two at 9ft. from the floor, and two at 12ft. from floor, and one ventilator near the ceiling, 9in. in diameter.

The total permanent inlet ventilation consists of four Sherringham valves, or 468 sq. in., thus allowing 14.6 sq. in. per head.

The total permanent outlet ventilation consists of one ventilator near the ceiling, 9in. in diameter, or 63 sq. in., thus allowing 1.9 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 72 sq. ft., or one-sixth of the floor space.

The light is received from left and right.

Room No. 11.

This room measures 26ft. 6in. \times 15ft. 6in., or 410 sq. ft., and the average number of children present during September, 1903, was 20 thus allowing 20.5 sq. ft. per head.

The total cubic capacity is 3,286 cubic feet, or 164.3 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows, and two hinge windows, two Sherringham valves, 14in. \times 12in.; one circular opening in chimney-breast, 9in. in diameter, and an open fireplace.

The total permanent inlet ventilation consists of two Sherringham valves, or 336 sq. in., thus allowing 16.8 sq. in. per head.

The total permanent outlet ventilation consists of one circular outlet in chimney-breast, or 63 sq. in., thus allowing 3.1 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area measures 64 sq. ft., or one seventh of the floor space.

The light is received from the left.

GIRLS' DEPARTMENT.

This department consists of one main room on ground floor, and two class-rooms on the first floor.

Room No. 6.

This room measures 48ft. 3in. \times 27ft. 3in., or 1,314 sq. ft., and the average number of children present during September, 1903, was 54, thus allowing 24.3 sq. ft. of floor space per head.

The total cubic capacity is 24,980 cubic feet, or 462.6 cubic feet per head.

Ventilation The ventilation consists of eight windows, opening on hinges, 3ft. 9in. \times 2ft. 4in.; six Sherringham valves, 15in. \times 10in., three of which will act as inlets and three as outlets, and four openings in ceiling, 4ft. \times 1ft.

The total permanent inlet ventilation consists of three Sherringham valves, at 9ft. from the floor, or 450 sq. in., thus allowing 8.3 sq. in. per head.

The total permanent outlet ventilation consists of three Sherringham valves, and four outlets in ceiling, or 2,754 sq. in., thus allowing 51 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 182 sq. ft., or one-seventh of the floor space.

The light is from the right and left.

Room No. 8.

This room measures 36ft. 9in. \times 28ft. 6in., or 1,047 sq. ft., and the average number of children present during September, 1903, was 59, thus allowing 17.7 sq. ft. per head.

The total cubic capacity is 19,375 cubic feet, or 328.4 cubic feet per head.

Ventilation. The ventilation consists of seven windows, opening on hinges; seven Sherringham valves, 1ft. 3in. \times 11in.; four outlets in the ceiling, two 1ft. 6in. \times 1ft. 6in. each, and two containing 81 circular holes 1in. in diameter, and one grating in the wall near the ceiling, 6in. \times 6in.

The total permanent inlet ventilation consists of seven Sherringham valves, or 1,155 sq. in., thus allowing 19.5 sq. in. per head.

The total permanent outlet ventilation consists of four outlets in ceiling, or 811 sq. in., thus allowing 13.7 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 230 sq. ft., or one-fourth of the floor space.

The light is received from the front, left and slightly from behind.

Room No. 10.

This room measures 28ft. \times 13ft. 9in., or 385 sq. ft., and the average number of children present during September, 1903, was 35, thus allowing 11 sq. ft. of floor space per head.

The total cubic capacity is 3,914 cubic feet, or 111.8 cubic feet per head.

Ventilation. The ventilation consists of two hinge windows and skylight; three Sherringham valves, 7ft. 6in. from the floor measuring 12in. \times 11in.; outlet in roof 4ft. 6in. \times 4ft. 6in., and an open fireplace.

The total permanent inlet ventilation consists of three Sherringham valves, or 396 sq. in., thus allowing 11.3 sq. in. per head.

The total permanent outlet ventilation consists of one outlet in the ceiling, or 2,916 sq. in., thus allowing 83.3 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area measures 47 sq. ft., or one-eighth of the floor space.

The light is received from the left and above.

INFANTS' DEPARTMENT.

This department consists of a main room and two class-rooms on the ground floor, and one on the first floor.

Room No. 1.

This room measures 33ft. \times 17ft., or 561 sq. ft., and the average number of children present during July, 1903, was 59, thus allowing 9.5 sq. ft. of floor space per head.

The total cubic capacity is 10,659 cubic feet, or 180.6 cubic feet per head.

There are 15 pegs in this room.

Ventilation. The ventilation consists of four windows, opening on hinges; six Sherringham valves, 15in. \times 10in., at 13ft. from floor, three of these will act as inlets, and three as outlets; three openings in ceiling 2ft. \times 1ft.

The total permanent inlet ventilation consists of three Sherringham valves, or 450 sq. in., thus allowing 7.6 sq. in. per head.

The total permanent outlet ventilation consists of three Sherringham valves, and three openings in ceiling, or 1,314 sq. in., thus allowing 22.2 sq. in. per head.

There is slight cross ventilation.

Lighting. The total lighting area measures 109 sq. ft., or one fifth of the floor space.

The light is received chiefly from behind and to a less degree from the left.

Room No. 2.

This room measures 28ft. 6in. \times 26ft., or 741 sq. ft., and the average number present during July, 1903, was 60, thus allowing 12.3 sq. ft. of floor space per head.

The total cubic capacity is 10,374 cubic feet, or 172.9 cubic feet per head.

Ventilation. The ventilation consists of six hinge windows and four hopper windows; five Sherringham valves, at a height of 13ft. from the floor, three of which may act as inlets and two as outlets.

The total area of permanent inlet ventilation is 450 sq. in., thus allowing 7.5 sq. in. per head, and the total area of permanent outlet ventilation is 300 sq. in., or 5 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area measures 165 sq. ft., or one-fourth of the floor space.

The light is received from the left and front.

Room No. 9.

This room measures 28ft. 6in. \times 20ft., or 570 sq. ft., and the average number present during July, 1903, was 41, thus allowing 13.9 sq. ft. of floor space per head.

The total cubic capacity is 6,555 cubic feet, or 159.8 cubic feet per head.

This room is situated above the sanitary conveniences.

Ventilation. The ventilation consists of two hinge windows, six Sherringham valves, 12in. \times 11in., four at 5ft. 6in., and two at 13ft. from floor, the latter will act as outlets, and two openings in ceiling, 4ft. \times 1ft.

The permanent inlet ventilation consists of four Sherringham valves, or 528 sq. in., or 12.9 sq. in. per head.

The permanent outlet ventilation consists of two Sherringham valves, and two openings in ceiling, or 1,416 sq. in., thus allowing 34.5 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area measures 72 sq. ft., or one eighth of the floor space.

The light is received from the left.

Room No. 7.

This room measures 28ft. \times 13ft. 9in., or 385 sq. ft., and the average number present during July, 1903, was 45, thus allowing 8.5 sq. ft. of floor space per head.

The total cubic capacity is 3,529 cubic feet, or 78.4 cubic feet per head.

Ventilation. The ventilation consists of four windows, opening on hinges; two Sherringham valves, 12in. \times 10in., and two gratings in wall near to the ceiling, 8in. \times 8in.

The total permanent inlet ventilation consists of two Sherringham valves, 240 sq. in., thus allowing 5.3 sq. in. per head.

The total permanent outlet ventilation consists of two gratings in wall, near to ceiling, or 128 sq. in., thus allowing 2.8 sq. in. per head.

There is cross ventilation.

There is an open fireplace with guard.

Lighting. The total lighting area measures 80 sq. ft., or one-fourth of the floor space.

The light is received from left, right, and front.

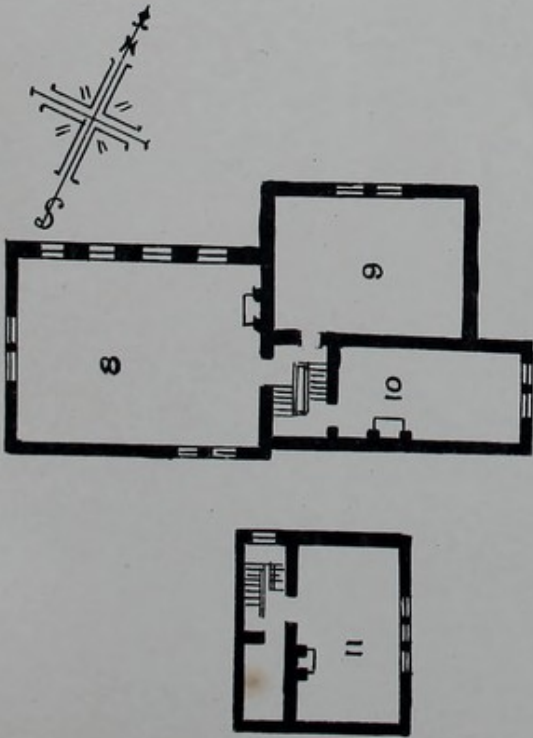
Recommendation.

- I. To remove the sanitary conveniences from their present position.

I understand that this work will be carried out next summer.

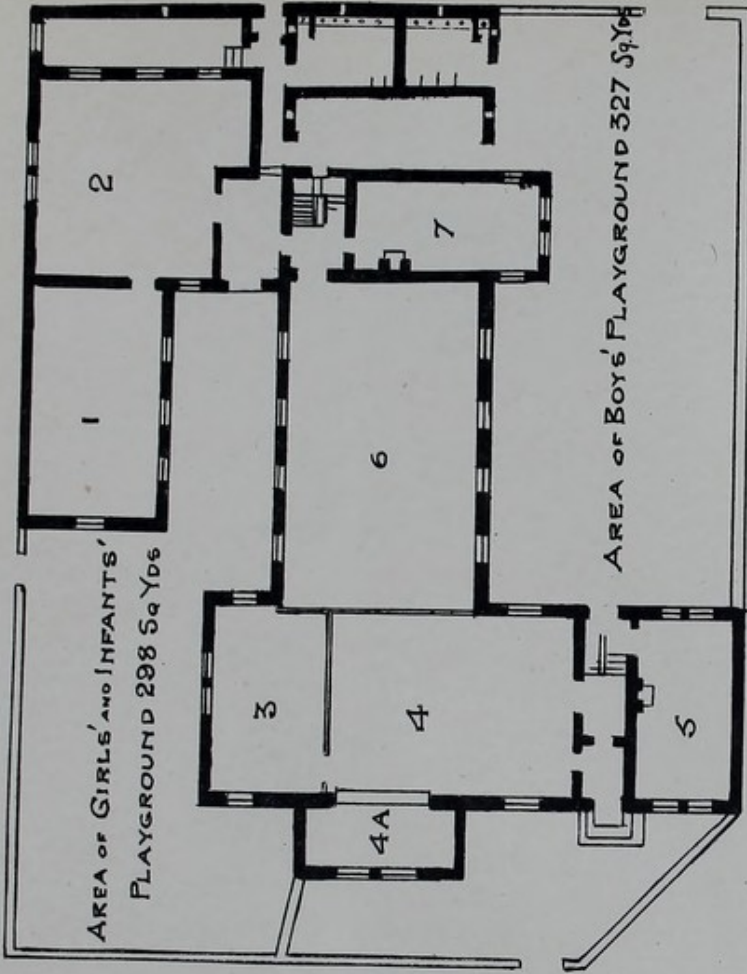
— GRIFFIN SCHOOLS WITTON —

Scale 30 feet to 1 inch



FIRST FLOOR PLAN

Room marked	Average height.	Cubic feet.
8.....	36' 9" x 28' 6" x 18' 6" =	19375
9.....	28' 6" x 20' 0" x 11' 6" =	6555
10.....	28' 0" x 13' 9" x 10' 2" =	3914
11.....	26' 6" x 15' 6" x 8' 0" =	3286



GROUND FLOOR PLAN

Room marked	Average height.	Cubic feet.
1.....	33' 0" x 17' 0" x 19' 0" =	10659
2.....	28' 6" x 26' 0" x 14' 0" =	10374
3.....	27' 3" x 18' 4" x 17' 0" =	8492
4.....	37' 9" x 26' 6" x 17' 0" =	17006
4A.....	20' 9" x 8' 10" x 16' 6" =	3023
5.....	26' 6" x 15' 6" x 12' 2" =	4997
6.....	48' 3" x 27' 3" x 19' 0" =	24980
7.....	28' 0" x 13' 9" x 9' 2" =	3529



ALL SAINTS.

(Mixed and Infant School.)

This school was erected about 1874, and is a one-storey building of stone, lined with brick.

Playgrounds.

There are two playgrounds—one for boys and one for girls and infants, measuring 512 sq. yds., and about 80 sq. yds. respectively.

The playgrounds are flagged. No portion is covered.

Sanitary Conveniences.

The sanitary conveniences are of the earthenware trough type (Merrill's), and are automatically flushed three times a day.

They are situated in the yard, at a distance of one yard and a half from the mixed school.

Each compartment measures 2ft. 6in. from seat-board to door, and is 2ft. 3in. wide. There is a passage in front 4ft. 6in. wide, and 8ft. high, and open at the top.

There are four compartments for boys', girls' and infants' respectively, and one urinal for the boys.

There are 12 linear feet of urinal accommodation for the boys.

The passage leading to the sanitary conveniences between the school and the Lancashire and Yorkshire Railway stables is unflagged. It is open to the air above.

Dry Refuse.

The dry refuse is stored in a covered brick ash-pit.

Heating.

The heating is effected by means of hot water pipes.

Walls.

The internal surfaces of the walls are of bricks, painted chocolate and pink.

The walls in the infant schoolrooms and the large room in the mixed school, are boarded to a height of 4ft. from the floor.

Floors.

The floors are boarded. They are swept daily and washed three times a year.

Lighting.

The lower panes in the windows are of frosted glass.

The partition between the rooms is of wood and glass, and can be removed, so as to make them into one room.

The artificial light is gas.

Boys' Cloak-Room.

The cloak-room for boys is situated at the main entrance, and is about 10ft. square. The door opens direct into the school.

This room is lighted by a window 7ft. \times 4ft. 6in., and its floor is flagged.

The walls are of brick, painted chocolate and pink-washed.

There are three iron lavatory basins.

There are about 20 pegs.

Girls' Cloak-Room

This room is situated near No. 4 room, and measures 11ft. 9in. \times 11ft. 9in.

The floor is of concrete. The walls are boarded.

This room is lighted by two windows, 3ft. 6in. \times 3ft., which open on hinges.

There are 120 pegs.

Opposite the above room is a lavatory, in which there are three iron basins. The waste pipe discharges over a gully outside. This room is lighted by a large skylight and two small windows, provided with wire gauze, which act as inlet ventilators.

MIXED DEPARTMENT.—Room No. 4.

The average number present in this room during September, 1903, was 71.

The total floor space measures, 54ft. 10in. \times 26ft.—1,425 sq. ft., or an average of 20 sq. ft. per scholar. The total cubic capacity is 24,949 cubic feet, or 351.3 cubic feet per head.

Lighting. The total lighting area measures 190 sq. ft., or about one-seventh of the floor space.

The light is received from the left and front.

Ventilation. The ventilation is by means of four Sherringham inlet ventilators in the walls, each 7in. \times 4in., and 7ft. from the floor, and four outlet ventilators in the ceiling, leading to a louvred ventilator on the roof. Three of these outlets measure 36in. \times 12in. each, and one 189 sq. in.

There are seven windows which will open on hinges; also one window opens into the boys' cloakroom.

The total permanent inlet ventilation consists of four Sherringham valves, each 7in. x 4in., or 112 sq. in., or an average of 1.5 sq. in. per scholar.

The total permanent outlet ventilation measures 1,485 sq. in., or an average of 20.9 sq. in. per scholar.

There is no cross ventilation.

Room No. 3.

The average number present in this room during September, 1903, was 64.

The total floor space measures 32ft. x 22ft., or 704 sq. ft., or an average of 11 sq. ft. per scholar. The total cubic capacity is 10,032 cubic feet, or 156.7 cubic feet per head.

Lighting. The total lighting area measures 104 sq. ft., or nearly one-seventh of the floor space.

The light is from the right and left, and indirectly from front and back.

There is incandescent light.

Ventilation. The ventilation in this room is by means of two Sherringham inlet ventilators, 7in. x 4in., 7ft. from the floor, and fixed in the walls, and four outlets in the ceiling 36in. x 9in.

There are three windows which will open on hinges.

The total area of permanent inlet ventilation openings measures 56 sq. in., or an average of .8 sq. in. per scholar.

The total permanent outlet ventilation measures 1,296 sq. in., or an average of 20.2 sq. in. per scholar.

There is cross ventilation.

Room No. 1.

The average number present in this room during September, 1903, was 48.

The total floor space measures, 16ft. x 20ft., or 320 sq. ft., or an average of 6.6 sq. ft. per scholar. The total cubic capacity is 4,560 cubic feet, or 95 cubic feet per head.

Lighting. The total lighting area measures 81 sq. ft., or about one-third of the floor space.

The light is received from the right and behind.

The artificial light is incandescent.

Ventilation. This room is ventilated by means of two Sherringham inlet ventilators, measuring 7in. \times 4in., and fixed in the walls at a height of 7ft. from the floor, and two outlets in the roof, measuring 36in. \times 9in.

There are four windows which will open, three on hinges and one as a casement.

The total area of the permanent inlet ventilation measures 56 sq. in., or an average of 1.1 sq. in. per scholar.

The total area of the permanent outlet ventilation measures 648 sq. in., or an average of 13.5 sq. in. per scholar.

There is no cross ventilation.

Room No. 2.

The average number present in this room during September 1903, was 40.

The total floor space measures 16ft. \times 20ft., or 320 sq. ft., or an average of 8 sq. ft. per scholar. The total cubic capacity is 4,560 cubic feet, or 114.0 cubic feet per head.

Lighting. The total lighting area measures 94 sq. ft., or about one-third the floor space.

The light is received from the left and behind.

The artificial light is incandescent.

Ventilation. There are three hinge windows and one casement.

There are two Sherringham valves, 7in. \times 4in., and two gratings in the ceiling, 3ft. \times 9in.

The permanent inlet ventilation consists of two Sherringham valves, or 56 sq. in., thus allowing 1.4 sq. in. per head, and the permanent outlet ventilation consists of two gratings in the ceiling, or 648 sq. in., thus allowing 16.2 sq. in. per head.

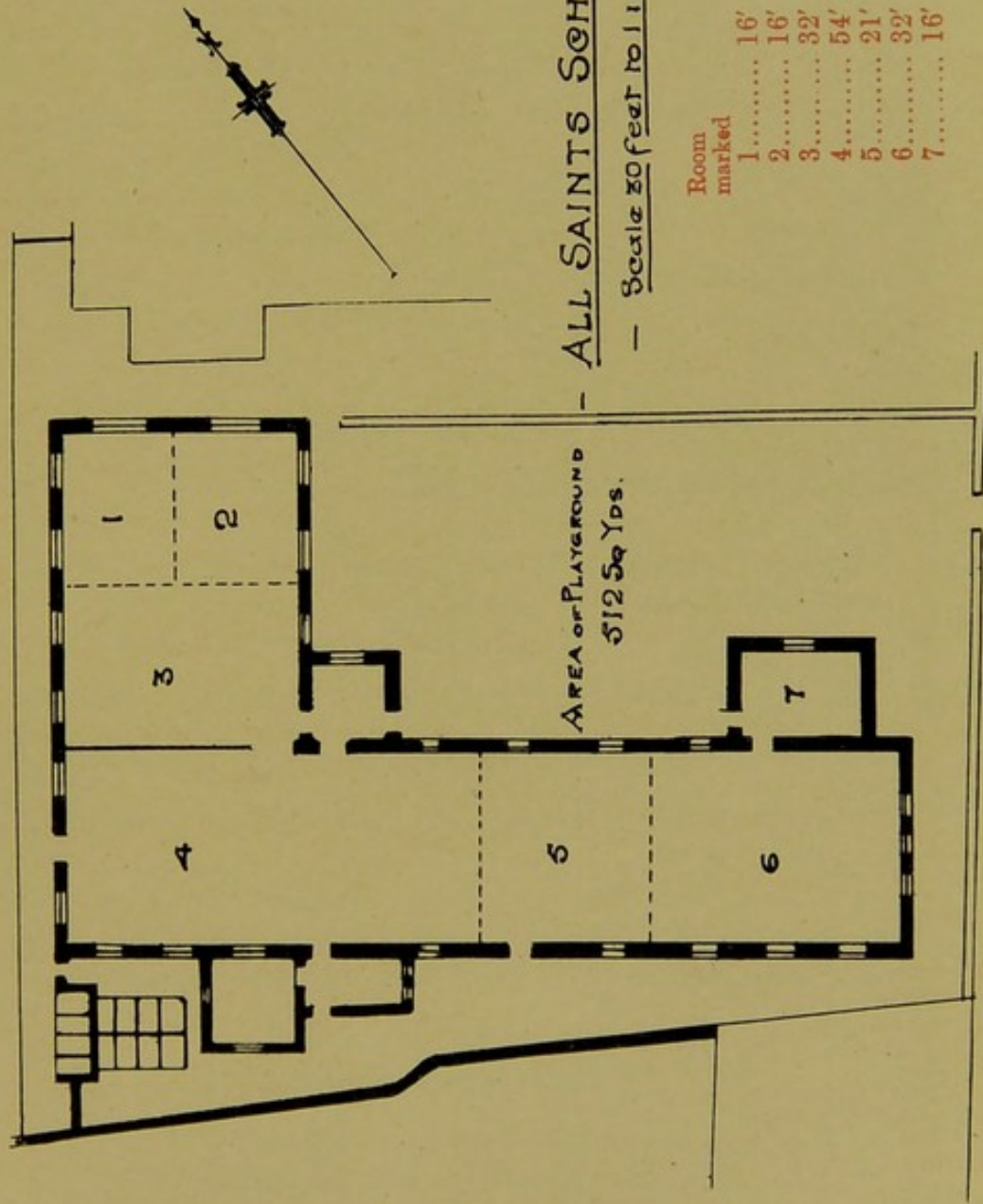
There is slight cross ventilation.

INFANTS' DEPARTMENT.

The infants' cloak-room is situated at the entrance to the school, and measures 16ft. \times 11ft.

The floor is boarded. The room is heated by hot water pipes and a fireplace.

This room is lighted by a window 7ft. \times 4ft. 6in., opening on a hinge at the top.



ALL SAINTS SCHOOL
 — Scale 20 feet to 1 inch —

Room marked	Average height.	Cubic feet.
1.....	16' 0" x 20' 0" x 14' 3" =	4560
2.....	16' 0" x 20' 0" x 14' 3" =	4560
3.....	32' 0" x 22' 0" x 14' 3" =	10032
4.....	54' 10" x 26' 0" x 17' 6" =	24949
5.....	21' 0" x 26' 0" x 17' 6" =	9555
6.....	32' 0" x 26' 0" x 17' 6" =	14560
7.....	16' 0" x 11' 6"	



In the room are two iron lavatory basins, and the waste pipe discharges over a gully outside.

The infants' department consists of two class-rooms, Nos. 5 and 6.

Room No. 5.

The average number present in this room during July, 1903, was 32.

The total floor space measures, 21ft. \times 26ft., 546 sq. ft., or an average of 17.0 sq. ft. per scholar. The total cubic capacity is 9,555 cubic feet, or 298.5 cubic feet per head.

Lighting. The total lighting area measures 75 sq. ft., or about one-seventh of the floor space.

The light is received from the left and right.

There are four windows opening on hinges.

Ventilation. There is no permanent inlet or outlet ventilation, and one open fireplace, with a guard.

There is a cooking-stove boxed off.

Room No. 6.

The average number present in this room during July, 1903, was 82.2.

The total floor area measures 32ft. \times 26ft., 832 sq. ft., or an average of 10.1 sq. ft. per scholar. The total cubic capacity is 14,560 cubic feet, or 177.1 cubic feet per head.

Lighting. The total lighting area measures 145 sq. ft., or nearly one-sixth of the floor space.

The light is received from the right, left and behind.

Ventilation. There are seven windows opening on hinges at the top.

There are no permanent inlet ventilators, and there is one outlet ventilator in the roof, measuring about 189 sq. in., and connected to a louvred ventilator fixed in the gable-end, thus allowing 2.3 sq. in. per head.

Recommendations.

- I. To improve the cloak-room accommodation for boys.
- II. To enlarge the ventilation openings where necessary.

CHRIST CHURCH,

MOSLEY STREET.

BOYS' AND GIRLS' DEPARTMENT.

This school was erected in 1857, and is a two-storey building of stone, lined with brick.

The boys' department is on the ground floor, and the girls' on the first floor.

Playgrounds.

There are two playgrounds separated by a wall in which a door has been fixed, so that both playgrounds can be used together. The playgrounds are flagged and measure 477 square yards for boys, and 168 square yards for girls.

Sanitary Conveniences.

The sanitary conveniences consist of white glazed earthenware troughs, which are situated under the yard of the house adjoining the school, and are about 7ft. below the level of the surface of the playgrounds.

There are four compartments for the boys, together with a urinal of slate slabs (7 linear feet.)

There are five compartments for the girls.

The conveniences are flushed three times a day.

The ventilation is by means of iron gratings opening to the areas in the yard.

Dry Refuse.

Dry refuse is stored in the caretaker's yard.

Walls.

The internal surfaces of the walls are of brick, and are painted dark red to a height of 5ft. from the floor, and the remainder painted green.

Staircase.

The stairs leading to the girls' school are of stone.

Floors.

The floors are boarded, and are swept daily and washed three times a year.

Heating.

The heating is by means of hot water pipes carried along the walls.

Lighting.

The windows are of plain glass, and in the boys' school about three-fifths of the windows are large panes, while the remaining two-fifths are in small panes, 7in. \times 4 $\frac{1}{2}$ in.

In the girls' school all the windows except the Sherringham hopper are of small panes, 7in. \times 4 $\frac{1}{2}$ in.

Ventilation.

There is an iron grating in the gable end of the girls' school, and a Boyle's ventilator on the roof.

Cloak-Room (Boys')

The cloak-room is situated near the main entrance. It is lighted by a window 6ft. \times 3ft. 4in., and is ventilated by means of a Tobin's tube and outlet 9in. \times 9in. near the ceiling which opens into class-room No 3.

The floor is flagged. There are two square white enamelled lavatory basins in this room, the waste pipe of which discharges over a gully outside.

There are 85 pegs.

The room is not heated.

Cloak-Room (Girls')

The cloak-room is situated near the entrance, and is 10ft. \times 8ft. The floor is flagged. This room is lighted by a window 5ft. \times 3ft. 6in., part of which is a hopper. The inlet ventilation is by means of a Tobin's tube. The outlet ventilation is by means of an opening in the roof, 2ft. \times 2ft.

There are 148 pegs arranged on the walls, and on a rack.

This cloak-room accommodation does not appear to be sufficient.

In this room there are two square lavatory basins, the pipe of which is untrapped and discharges over an outside gully.

BOYS' DEPARTMENT.

This department consists of one large room and two class-rooms.

Room No. 1.—Ground Floor.

The average number present in this room during September, 1903, was 165.

The total floor space measures 62ft. 4in. \times 33ft. 4in., or 2,077 sq. ft., or an average of 12.5 sq. ft. per scholar. The total cubic capacity is 31,161 cubic feet, or 188.8 cubic feet per head.

Lighting. The total lighting area measures 298 sq. ft., or about one-seventh of the floor space.

The light is from the front and behind.

Ventilation. The ventilation is by means of four hoppers and ten swivel windows. These hoppers cannot be closed, and if calculated as permanent inlet ventilation, they will allow 3.5 sq. in. per head.

The permanent outlet area measures 256 sq. in., and consists of four openings near the ceiling, 8in. \times 8in., thus allowing 1.5 sq. in. per head.

There is cross ventilation.

Room No. 2.

This room is separated from the main room, No. 1, by means of a glazed partition.

The average number present in this room during September, 1903, was 50.

The total floor space measures 33ft. \times 27ft. 6in., or 907.5 sq. ft., or an average of 18 sq. ft. per scholar. The total cubic capacity is 13,612 cubic feet, or 272.2 cubic feet per head.

Lighting. The total lighting area measures 66 sq. ft., or about one-thirteenth of the floor space.

The light is from the left and indirectly through the partition behind. The side of the room furthest from the window is dark.

Ventilation. The ventilation consists of two hopper and two swivel windows, and two Tobin's tubes, 8in. \times 4in., 5ft. from the floor.

There is one opening, 8in. \times 6in. into the girls' cloak-room.

The total area of permanent inlet ventilation is 64 sq. in., but if the window hoppers be calculated the total area will be 200 sq. in., thus allowing 4 sq. in. per head.

There is no permanent outlet opening to the external air.

Room No. 3.

The average number present in this room during September, 1903, was 30.

The total floor space measures 396 sq. ft., or an average of 13.2 sq. ft. per scholar. The total cubic capacity is 5,940 cubic feet, or 198 cubic feet per head.

Lighting. The total lighting area measures 43 sq. ft., or about one-ninth of the floor space.

The light is from behind. This room is sufficiently lighted.

Ventilation. The ventilation is by means of one window hopper, one swivel window, and an open fireplace. There is also an

outlet near the ceiling, 18in. \times 18in., opening into the cloak-room, and another, 18in. \times 18in., opening into the porch.

The total area of permanent inlet ventilation is 144 sq. in., if the window hopper is calculated, thus allowing 4.8 sq. in. per head.

The total area of permanent outlet ventilation is 324 sq. in., thus allowing 10.8 sq. in. per head. The opening into the cloak-room has not been calculated, as it does not communicate with the external air.

GIRLS' DEPARTMENT.

Room No. 4.—First Floor.

The average number present in this room during September, 1903, was 207.

The total floor space measures 90ft. \times 33ft., 2,970 sq. ft., or an average of 14.3 sq. ft. per scholar. The total cubic capacity is 47,520 cubic feet, or 229.5 cubic feet per head.

Lighting. The total lighting area measures 380 sq. ft., or about one-seventh of the floor space.

The light is received from behind and the front.

Ventilation.

There are thirteen windows in which are four hoppers which cannot be closed, and if these be taken as permanent inlet ventilators the average per head will be 2.6 sq. in. Also there are twelve swivel windows.

The permanent outlet ventilation measures 648 sq. in., and consists of three outlets in the roof, 12in. \times 18in., leading to a Boyle's ventilator, giving an average of 3.1 sq. in. outlet ventilation per scholar.

Room No. 5.

The average number present in this room during September, 1903, was 19.

The total floor-space measures 18ft. \times 14ft., or 252 sq. ft., or an average of 13.2 sq. ft. per scholar. The total cubic capacity is 4,032 cubic feet, or 212.2 cubic feet per head.

Lighting. The total lighting area measures 54 sq. ft., or about one-fourth of the floor space.

The light is received from the left.

Ventilation. The outlet ventilation consists of one opening in the roof, 12in. \times 12in., and an opening in the window 12in. \times 12in., or 288 sq. in., thus allowing 15.1 sq. in. per head.

There is one Sherringham hopper, and one swivel window. The hopper cannot be closed, and if it is calculated as a permanent inlet it will allow 7.1 sq. in. per head.

Room No. 6.

This room is separated from No. 5 by a partition composed of wood and glass.

The average number present in this room during September, 1903, was 46.

The total floor space measures 23ft. x 18ft., 414 sq. ft., or an average of 9 sq. ft. per scholar. The total cubic capacity is 6,624 cubic feet, or 144 cubic feet per head.

Lighting. The total lighting area measures 54 sq. ft., or about one-seventh of the floor space.

The light is received from the right.

Ventilation. The total permanent outlet ventilation measures 24 sq. in., or an average of .5 sq. in. per head. There is an open fireplace.

There is a hopper in the window giving an opening area of 136 sq. in., and also one swivel window. The window hopper cannot be closed, and if it is calculated as a permanent inlet it will allow 2.9 sq. in. per head.

Recommendations.

- I. To improve the cloak-room accommodation.
- II. To provide additional ventilation openings where necessary.
- III. To improve the light of No. 2 room.

CHRIST CHURCH INFANT SCHOOL,

ROCKLIFFE STREET.

This school was erected in 1888, and is a one-storey building of stone, lined with bricks.

There are iron grates fixed in each gable-end, and also louvres in the roof for ventilation.

Playground.

There is one flagged playground, measuring 321 sq. yds.

Sanitary Conveniences.

The sanitary conveniences are of the trough type.

The boys' consist of the McFarlane iron trough system. There are eight compartments, which are flushed three times a day. These conveniences are within 3ft. of the cloak-room, and school door, and the passage in front of the conveniences is not open at the top.

The conveniences for the girls are situated about 11 yds. from the school, and are of the white glazed syphon type. These are far superior to those used by the boys. There are six compartments, one of which is used by the teachers; the passage in front is not open at the top.

Dry Refuse.

The dry refuse is stored in three tubs, which are placed near the boys' conveniences, and are uncovered.

Walls.

The internal walls of the school are of brick.

The walls to a height of 4ft. 6in. from the floor are of glazed bricks, the remainder being painted pale green.

Floors.

The floors are boarded except those of the cloak-rooms which are of wooden blocks. They are swept daily and washed three times a year.

Lighting.

The lighting is by means of sash windows, and the glass is plain throughout the school.

The artificial lighting is by gas.

Heating.

The heating of the rooms is by means of hot water pipes.

Cloak-Rooms.

There are two cloak-rooms, which are situated at the east end of the school. They measure 8ft. x 7ft., and each is lighted by a window 4ft. x 1ft. 8in., made to open. The floors are of wooden blocks, and the partition between the cloak-rooms and the door of the school is of wood and glass, and open at the top. The walls are composed of glazed brick to a height of 4ft., and the ceiling is boarded.

There are 50 pegs in each room. Racks are provided for the boys in the large school room.

There is a white enamelled square lavatory basin in each cloak-room, and the waste pipes are trapped and discharge over a gully outside. This cloak-room accommodation is insufficient.

Room No. 1.

The average number present in this room during July, 1903, was 122.8.

The total floor space measures, 62ft. \times 32ft. 3in., or 1,999 sq. ft., or an average of 16.2 sq. ft. per scholar. The total cubic capacity is 29,992 cubic feet, or 244.3 cubic feet per head.

A trap-door in the floor of this room leads down to the boiler-house.

Lighting. The total lighting area measures 324 sq. ft., or about one-sixth of the floor space.

The light is from the front and behind.

Ventilation. This room is ventilated by means of seven window-sill ventilators, $4\frac{1}{2}$ in. \times $1\frac{3}{4}$ in., and three Boyle's valves, 7in. \times 4in., inlet ventilators, 6ft. 6in. from the floor, and three outlet ventilators in the roof.

The total permanent inlet ventilation measures 139 sq. in., or an average of 1.1 sq. in. per scholar, and consists of seven window-sill ventilators, $4\frac{1}{2}$ in. \times $1\frac{3}{4}$ in., and three Boyle's valves.

The total permanent outlet ventilation measures 1,356 sq. in., or an average of 11 sq. in. per scholar, and consists of three circular ventilators in the ceiling, 2ft. in diameter.

There is cross ventilation.

Rooms, Nos. 2, 3, 4 and 5.

The average number present in these rooms during July, 1903, was 52.

The total floor space of rooms 2 and 3 each measures 380 sq. ft., and rooms Nos. 4 and 5, 390 sq. ft., or an average of 7.3 and 7.5 sq. ft. per scholar respectively. The total cubic capacity of Nos. 2 and 3 rooms is 5,510 cubic feet, or 105.9 cubic feet per head, and the total cubic capacity of rooms Nos. 4 and 5 is 5,850 cubic feet each, or 112.5 cubic feet per head.

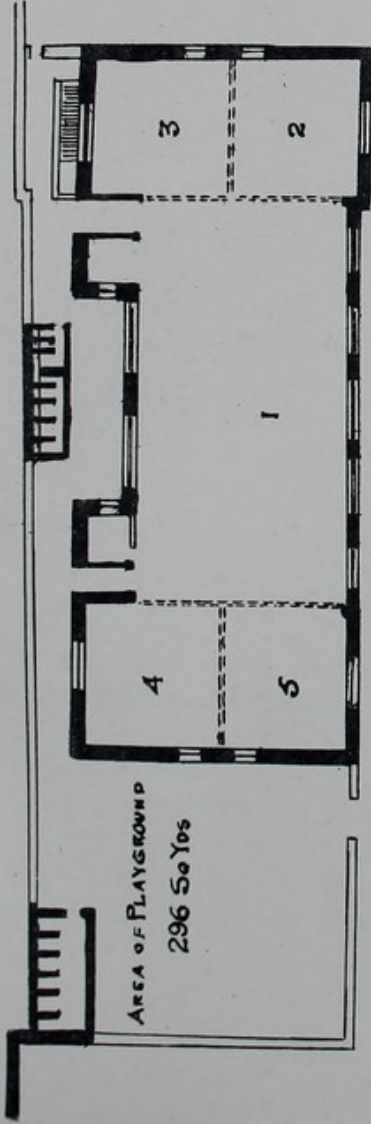
Lighting. The total lighting area of each room measures 57 sq. ft., or about one-sixth of the floor space.

Nos. 2 and 4 receive light from left and behind, Nos. 3 and 5 from right and behind.

Ventilation. The total permanent inlet ventilation consists of one hopper window; two inlet gratings in walls, 9in. \times 6in.; two window-sill ventilators, $4\frac{1}{2}$ in. \times $1\frac{3}{4}$ in., and one circular outlet in the

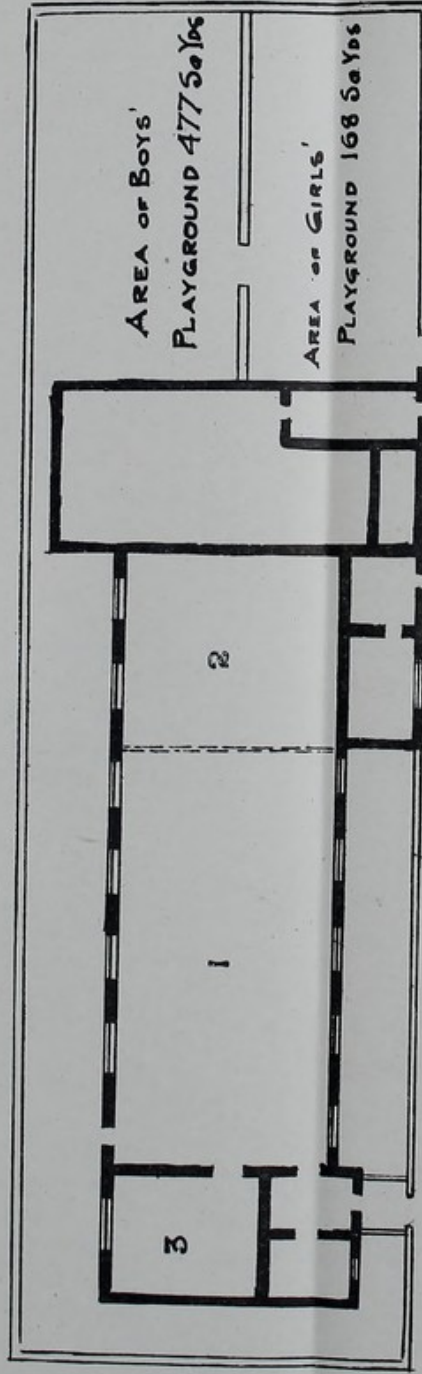
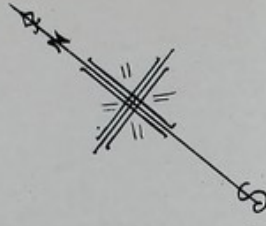
— CHRIST CHURCH SCHOOLS —

Scale 30 feet to 1 inch.



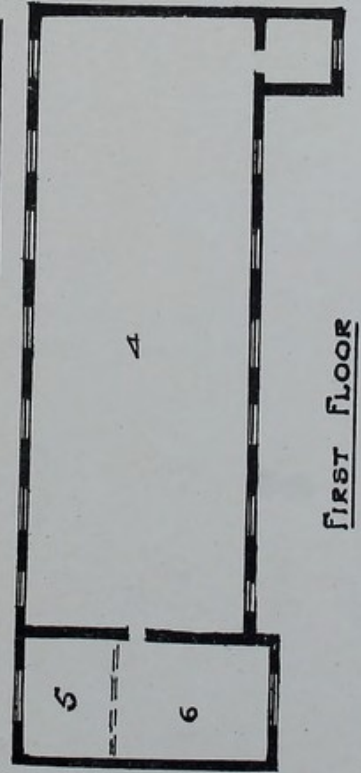
Room marked	Average height.	Cubic feet.
1.....	62' 0" x 32' 0" x 15' 0" =	29992
2.....	20' 0" x 19' 6" x 14' 6" =	5510
3.....	20' 0" x 19' 6" x 14' 6" =	5510
4.....	20' 0" x 19' 6" x 15' 0" =	5850
5.....	20' 0" x 19' 6" x 15' 0" =	5850

— ROCKLIFFE ST. —



Room marked	Average height.	Cubic feet.
1.....	62' 4" x 33' 4" x 15' 0" =	31161
2.....	33' 0" x 27' 6" x 15' 0" =	13612
3.....	22' 0" x 18' 0" x 15' 0" =	5940
4.....	90' 0" x 33' 0" x 16' 0" =	47520
5.....	18' 0" x 14' 0" x 16' 0" =	4032
6.....	23' 0" x 18' 0" x 16' 0" =	6624

GROUND FLOOR. MOSLEY ST.



FIRST FLOOR



ceiling, 2ft. in diameter, and nearly all the window space has been made to open.

The total area of permanent inlet ventilation is 123 sq. in., thus allowing 2.3 sq. in. per head, and the total area of permanent outlet ventilation is 452 sq. in., thus allowing 8.7 sq. in. per head.

These rooms are separated from the large rooms by glazed slides.

Recommendations.

- I. The sanitary conveniences for the boys should be re-constructed upon the same principle as those for the girls, and, if possible, should be fixed further away from the school than their present position.
- II. If the latter half of the above recommendation was carried out, more adequate cloak-room accommodation could be provided. This is very desirable.
- III. The numbers of children in rooms, 2, 3, 4, and 5 should not exceed 38 or 39.

ST. PETER'S, Mill Hill.

This school was opened on August 19th, 1889, and is situated on an open site, bounded by Watson Street, Penzance Street, and Bowen Street. It is built of stone, and is in good condition. The surrounding land slopes away from the building. It is a two storey building, the ground floor being used as the day school, and the 1st floor as a chapel.

Playgrounds.

There are two playgrounds for boys and girls. These are separated by a stone wall, but access is gained through an iron gate, which is not often opened.

The boys' playground measures 196 sq. yds. It is partly flagged, and the flagged portion is near the school, and is about 14ft. wide. The remainder is unflagged and not in good condition. The surface of the yard is almost level.

The girls' playground measures 188 sq. yds. This yard is also partly flagged, i.e., near the school, about 16 ft. in width. The remainder is unflagged, and also not in good repair.

There is a very large playground adjoining these playgrounds which

is not fenced in. The boys drill and play football on this ground.

There is no covered playground.

Sanitary Conveniences

The sanitary conveniences are on the earthenware trough system, and the shafts are carried up to the seatboards. They are flushed every night by two 20 gallons cisterns with ball-tap.

There are four compartments for the boys, and 9 linear feet of urinals. The backs of the urinals are cemented, but out of repair; the floor is well concreted, and there is a channel leading to a properly trapped gully. These urinals are flushed by hand.

There are five compartments for the girls. Each compartment measures, 2ft. 8in. x 2ft. 8in., and is ventilated over each door.

There is a passage in front of the compartments, 4ft. wide, open to the external air, with a face wall, 8ft in height.

The floors of each compartment, and passage are well concreted and slope towards the surface of the urinals.

The conveniences are 7 yds. from the nearest door or window.

There is a pedestal w.c. inside, in a place adjoining the south porch. The compartment is lighted by two windows, 2ft. 4in. x 1ft. 4in., one of which opens for ventilation. There is also a lavatory basin at this part, the waste pipe of which is trapped, but which is connected to the drains.

There are 4 linear feet of urinals for the infant boys.

The backs are constructed of bricks, and the floor is flagged and leads to a perforated grating in the ground, over disconnecting chamber.

Drainage

The drainage appears to be in good condition. All the downspouts are directly connected to the drains, and two waste-pipes directly connected to the drains.

There are two systems of drainage, the w.c.'s in the yard discharging separately into the sewer, and the drains receiving the inside w.c., and waste pipes, and downspouts discharging separately.

The drains from the w.c.'s in the yards are disconnected by means of a trap placed in the chamber.

Lavatory Accommodation.

There is one brown glazed sink in the porch in the boys' yard, the waste pipe of which is directly connected to the drains; there is also one in the girls' porch, the waste pipe discharging over a gully in the yard.

Refuse.

There is a covered ash-pit adjoining the girls conveniences, which measures 5ft. x 5ft. x 4ft., or 100 cubic feet. It is emptied from the inside of the boundary wall.

Cloak-Room.

There is no special cloak-room. The boys' clothes, if wet, are placed on the handrail of the staircase at the north end of the school.

The girls use the porch, and south staircase.

There are about 110 hooks placed against the wall of the staircase, and there are two racks which can be hoisted to the ceiling in the porch, with 104 hooks.

Heating.

The heating of the rooms is carried out by hot-water pipes placed round the rooms.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept every night and washed twice a year—Midsummer and Christmas.

Walls

The walls are boarded all round to a height of 4ft. 6in., and painted a brown colour; above this height they are rendered with plaster and painted a pea-green colour.

There is no evidence of dampness.

MIXED AND INFANTS' DEPARTMENTS.

There are six rooms used for teaching in this school: Nos. 1, 2, 3, and 4, are used by the Mixed Department, and No. 5 and 6 by the infants' department.

Room No. 2.

This room measures 20ft. x 20ft., or 400 sq. ft., is ascended by three steps from large room, and is separated by shutters. The average number of children present during September, 1903, was 32, thus allowing 12.5 sq. ft., of floor space per head. The total cubic capacity is 6,000 cubic feet, or 187.5 cubic feet per head.

Ventilation The ventilation consists of 15 ft. of window space made to open, three hopper windows, 8ft. from the floor, and one hinge window. There are two ventilators, one entering from the staircase, and one entering into room No. 2, each measuring, 3ft. x 1ft. There are no permanent ventilators from the external air.

Lighting. There are three windows in this room, measuring 80 sq. ft., which is equal to one-fifth of the floor space. The light is from the left. The glass is transparent. There are four naked gas jets. The height of the window-sill from the floor is 2ft.

Room No. 1.

This room is on the same level as the large room, but can be entered from room No. 2, by a door and four steps. It measures 20ft. \times 19ft., or 380 sq. ft., and the average number of children present during September, 1903, was 48, thus allowing 7.9 sq. ft. of floor space per head. The total cubic capacity is 5,700 cubic feet, or 118.7 cubic feet per head.

Ventilation. The ventilation consists of window openings 14 sq. ft., two hopper windows opening 6ft. from the floor; three upper window openings, without side shields.

There is a circular window ventilator with five holes, each $1\frac{1}{2}$ in. in diameter. As mentioned in the ventilation of No. 1 room there is an opening in the wall from one room into another.

Lighting. There are six windows in this room having an area of 178 sq. ft., which is equal to one-half of the floor space.

The light is from the left, right, and behind.

There are four gas jets.

Room No. 4.

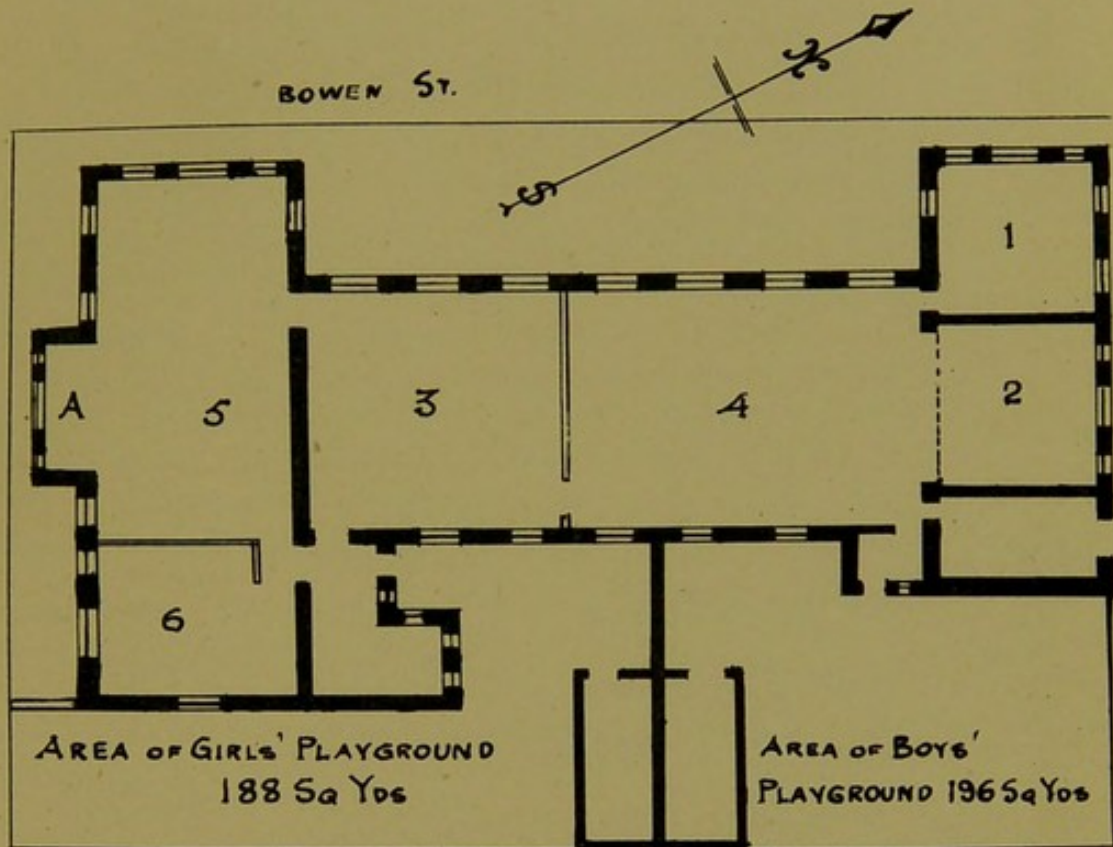
This room is separated from room No. 3 by glass slides. The size is 45ft. 10in. \times 30ft., or 1,374 sq. ft. The average number of children present during September, 1903, was 155, thus allowing 8.8 sq. ft. of floor space per head. The total cubic capacity is 20,625 cubic feet, or 133.0 cubic feet per head.

Ventilation. The ventilation consists of three hopper windows, 9ft. from the floor; 11 window openings without side shields, at 11ft. from floor, and seven at 12ft. 6in. from floor. There are two circular window ventilators having five openings in each, of $1\frac{1}{2}$ in. diameter. There are no other openings.

There is good cross ventilation.

Lighting. The total lighting area is 327 sq. ft., or one-fourth of the floor space.

ST. PETER'S SCHOOL MILL HILL



Room marked.		Average height.	Cubic feet.
1	20' 0" x 19' 0"	15' 0" =	5700
2	20' 0" x 20' 0"	15' 0" =	6000
3	32' 0" x 30' 0"	15' 0" =	14400
4	45' 10" x 30' 0"	15' 0" =	20625
5	46' 0" x 25' 0"	15' 0" =	17250
Recess A.	16' 6" x 6' 6"	15' 0" =	1608
6	25' 0" x 19' 0"	15' 0" =	7125



The light is from behind, the front, and slightly from the right through the glass slides.

There are 24 naked gas jets.

Room No. 3.

This room measures 32ft. \times 30ft., or 960 sq. ft. The average number of children present during the month of September was 64, thus allowing 15 sq. ft. of floor space per head. The total cubic capacity is 14,400 cubic feet, or 225 cubic feet per head.

Ventilation There are two hopper window openings, 10ft. from the floor; eight windows opening without side shields, 10ft. from the floor, and five at 12ft. from the floor. There is one circular window ventilator, with five inlets having a diameter of $1\frac{1}{2}$ in.

There is no permanent ventilation.

There is cross ventilation.

Lighting. There are 233 sq. ft. of lighting in this room, or one-fourth of the floor space.

The light is from behind and the front, and slightly from the large room on the left, through the glass slides.

There are eight gas jets in this room.

Room No. 6.

This room measures 25ft. \times 19ft. 0in., or 475 sq. ft. The average number of children present during September, 1903, was 62., thus allowing 7.6 sq. ft. of floor space per head. The total cubic capacity is 7,125 cubic feet, or 114.9 cubic feet per head.

This is a babies' gallery room.

Ventilation The ventilation of this room consists of two hopper windows, 10ft. from the floor, and two opening on hinges, 10ft. from the floor, and two opening on hinges, 12ft. from the floor. Also there is one circular window, with five holes each $1\frac{1}{2}$ in. diameter.

There are no openings other than doors or windows.

Lighting. The total lighting area is 124 sq. ft., which is nearly one-fourth of the floor space.

The light is from the right and front.

There are four gas jets.

Room No. 5

The floor space of this room measures 1,257 sq. ft. The average number of children present during June, 1903, was 161, thus allowing, 7.8 sq. ft. per head. The total cubic capacity is 18,858 cubic feet, or 117.1 cubic feet per head.

This is a gallery room.

Ventilation. The ventilation consists of two hopper windows, 10ft. from the floor; two window openings, without side shields, 10ft. from the floor; and two 12ft. from the floor.

There is cross ventilation.

There is no permanent ventilation.

Lighting. The total lighting area is 290 sq. ft., which is almost one-fourth of the floor space.

Two classes receive the light from the right and behind; one from behind, and in front, and one from the left.

There are 12 naked gas jets.

Recommendations.

- I. To arrange that rooms 1, 4, 5 and 6 shall not contain more than 38, 137, 139 and 52 scholars respectively.
- II. To provide suitable cloak-room accommodation.
- III. To provide sufficient inlet and outlet ventilation openings where they are deficient.

EMMANUEL SCHOOL.

This school was opened in 1882, and alterations and extensions were carried out in 1897. It consists of mixed and infants' departments. The schools are built of brick, are in good condition and on an open site in Wilson Street.

Playgrounds.

There are two playgrounds; enclosed by a brick boundary wall. The boys' playground is completely separated from the girls'. The area of the boys' playground is 406 sq. yds., but another playground has been added recently which is not shewn in the plan, which is very large, and used for drilling, etc. The playground is partly flagged; the portion flagged is from the schoolroom to the sanitary conveniences.

The girls' playground measures 660 sq. yds., and is flagged from the main schoolroom to the end of the babies' class-room; the rest is unflagged, and is not in good condition.

There are two large open spaces immediately adjoining the school which the scholars use.

There is no covered playground.

Sanitary Conveniences.

These are well constructed. The boys' conveniences are situated in their playground, and the girls' and infants' conveniences in the girls' playground. They are situated near the division wall of the recently added playground, and are 7 yds. from the nearest school door or window. The type of the conveniences is the brown earthenware trough.

There are three series of conveniences; the boys' and girls' are back to back, and the infants' are at right angles to the boys' and girls' conveniences. Each series is flushed twice or three times a week by an automatic cistern of about 25 gallons capacity.

Each series has seven compartments, six for the scholars and one for the teachers. Each compartment measures 2ft. 5in. to the seat-board, and is 2ft. 7in. wide. There is a passage in front open to the external air, 4ft. wide, and a face wall, 7ft. high.

The internal walls of the compartments are built of salt-glazed bricks, the floors are well flagged, and slope to a gully. Each compartment is well lighted by a pane of glass in the roof, and ventilated over the doors.

There are 16 linear feet of urinals adjoining the face wall of the boys' conveniences. The back is rendered with cement, and the floor flagged, and a channel formed, leading to a properly trapped gully.

The flushing of urinals is carried out by hand.

Drainage.

The drainage appears to be in good order. All the downspouts are connected. The lavatory waste pipes are not trapped.

Lavatory Accommodation.

There are three white glazed lavatory basins in the cloak-room opposite the main entrance. There are three iron lavatory basins in cloak-room No. 1 in boy's yard. There are also three iron lavatory basins in the porch entering the infants' room from the playground. This porch is lighted by a window 2ft. 5in. x 3ft. 0in. The waste pipes are not trapped, but discharge over gullies outside.

Refuse.

There is a covered ash-pit 5ft. 9in. \times 5ft. \times 3ft., or 88 cubic feet. It is situated against the boundary wall opposite the girls' conveniences, and is emptied from outside.

Cloak-Rooms.

That for the infants and the 1st Standard is situated at the main entrance, and marked No. 11 on plan. It is partitioned from room No. 10, and forms a vestibule. The room measures 19ft. 6in. \times 11ft. 9in., and is lighted by the glass partition from Room No. 10. There are about 90 hooks placed on racks and against the walls. The room is warmed by hot water pipes. There is an outlet ventilator, 6in. \times 4in. in the chimney-breast. As mentioned in the remarks on lavatory accommodation, there are three white glazed lavatory basins in this cloak-room.

There is a cloak-room in the boys' playground, No. 4. This room measures 15ft. \times 6ft., and is lighted by four windows, 3ft. \times 2ft. 2in. This cloak-room is not ventilated, and is not heated. There are about 60 hooks placed against the walls.

There is a large cloak-room at the entrance of the new portion of the school from the mixed schoolroom. It measures 24ft. \times 12ft., and is lighted by two windows, 7ft 0in. \times 4ft. 6in., of which 4ft. 6in. \times 3ft. will open. The room is ventilated by three Sherringham valves, 12in. \times 6in.. There are about 90 hooks placed on racks, and against the walls. Hot water pipes are placed round the room for heating. There is a trap door in the floor, which leads to the cellar. The floor is constructed of tongued and grooved boards laid on concrete.

This room has good cross ventilation.

The small porch entering from the girls' playground into the large schoolroom is also used as a cloakroom. There are about 30 hooks placed against the wall, and the porch is lighted by a window 3ft. 0in. \times 2ft. 2in. There is no means of warming the porch.

Floors.

The floors in the old part are constructed of tongued and grooved boards, with a ventilated cavity underneath. The floors of the new part are constructed of tongued and grooved boards, laid on concrete. They are swept every night, and washed twice a year.

Walls

The walls in the large mixed room are painted dark green up to 5ft. 6in. from the floor; above this height they are of a dark blue colour. The infants' school, and rooms 9 and 10 in the mixed

school, are painted a dark green colour up to a height of 4ft. 6in. from the floor, and above this height they are washed a pink colour.

Rooms 1 and 2, and cloak-room 3, are painted a chocolate colour up to 4ft., and above this height a pea-green colour.

Heating.

The heating of the rooms is carried out by hot water pipes, and in room No. 10 there is an open firegrate.

MIXED AND INFANTS' DEPARTMENTS.

There are five rooms in the mixed department, and three in the infants'. Nos. 1, 2, 8, 9 and 10 are used by the mixed school, and Nos. 12, 13 and 14 are used by the infants.

Room No. 1.

This room, together with room No. 2, and cloak-room No. 3, are the portions which were added in 1897.

No. 1 Room measures 25ft. \times 24ft., or 600 sq. ft., and the average number of children present during September, 1903, was 78, thus allowing 7.6 sq. ft. of floor space per head. The total cubic capacity is 9,600 cubic feet, or 123 cubic feet per head.

Ventilation. The ventilation consists of six upper hopper windows, 4ft. 6in. \times 1ft. 0in. These windows are opened in pairs by a hand screw, seven Sherringham valves, 1ft. 3in. \times 6in., at a height of 6ft. from the floor, and one outlet in the ceiling, 2ft. \times 3ft., leading to a Cooper's cowl on the roof.

The permanent inlet ventilation consists of seven Sherringham valves, 15in. \times 6in., opening 6ft. from the floor. The total area of the permanent inlet ventilation is 630 sq. in., thus allowing 8.0 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, 2ft. \times 3ft., or 864 sq. in., thus allowing 11 sq. in. per head.

Lighting. The total lighting area of this room is 129 sq. ft., which is equal to one-fourth of the floor space.

The light is from the left, right, and behind.

The greater portion of the glass throughout the school is semi-transparent, and some of the windows have wire guards fixed outside.

There are two incandescent lights, and six naked gas jets.

Room No. 2.

There is a passage partitioned off this room by a glass partition, as will be seen in the plan. This room measures 30ft. \times 19ft. 6in., or 585 sq. ft., and the average number of children present during September, 1903 was 64, thus allowing 9.1 sq. ft. per head. The total cubic capacity is 9,360 cubic feet, or 146.2 cubic feet per head.

There are two Sherringham valves, and two windows which will open in this passage. The top of this partition is about 3ft. below the ceiling, thus allowing cross ventilation when the windows of No. 2 room and those in the passage opposite are open.

Ventilation. The ventilation consists of three upper hopper windows (opened together by a hand screw), 4ft. 6in. \times 1ft. 0in.; four Sherringham valves, 15in. \times 6in., opening at a height of 6ft. from floor, and one outlet in ceiling, 2ft. \times 3ft., leading to Cooper's cowls on roof, or 864 sq. in.

The permanent inlet ventilation consists of four Sherringham valves, 15in. \times 6in., or 360 sq. in., thus allowing 5.6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, 2ft. \times 3ft., or 864 sq. in., thus allowing 13.5 sq. in. per head.

Lighting. The total lighting area is 94 sq. ft., which is equal to one-sixth of the floor space; but indirect light is also received from the windows, in the passage opposite the glass slides.

The light is received from the right through the glass slides, and from the left.

There are four incandescent lights.

Room No. 8.

This room is used on Sundays, and has a chancel. It measures 54ft. \times 32ft. 9in., or 1,768 sq. ft., and the average number of children present during September, 1903, was 140, thus allowing 12.6 sq. ft. of floor space per head. The total cubic capacity is 35,370 cubic feet, or 252.6 cubic feet per head.

Ventilation. The ventilation consists of seven upper hopper windows, 1ft. 4in. \times 1ft. 4in., and one window opening on hinges into the cloak-room, 1ft. 4in. \times 1ft. 4in.; three tubes discharging air through perforated zinc at a height of 6ft. from the floor, 4in. \times 4in.;

two outlets in the wall 9in. \times 9in., and three outlets in the ceiling, 1ft. 6in. in diameter, and also in the chancel, one circular outlet, 12in. in diameter, and one grating, 9in. \times 6in.

The permanent inlet ventilation consists of three box tubes, 48 sq. ins., discharging air through perforated zinc, at a height of 7ft. from the floor, thus allowing .3 sq. in. per head.

The permanent outlet ventilation consists of two outlets in the wall, or 162 sq. in., and three outlets in the ceiling, or 762 sq. in., and two others in chancel, or 167 sq. in. The total area of permanent outlet ventilation is 1,091 sq. in., thus allowing 7.7 sq. in. per head.

Lighting. The total lighting area is 186 sq. ft., which is equal to one-ninth of the floor space.

Two classes receive the light from the left and right, and one class from the front and behind.

There are ten incandescent lights, and five naked gas jets.

Room No. 9.

This room measures 20ft. \times 32ft. 9in., or 655 sq. ft., and the average number of children present during September, 1903, was 74, thus allowing 8.8 sq. ft. of floor space per head. The total cubic capacity is 13,100 cubic feet, or 177 cubic feet per head.

Ventilation. The ventilation consists of four upper hopper windows, 1ft. 3in. \times 1ft.; two box tubes similar to those in the large room, 4in. \times 4in.; one inlet in the wall, 12in. \times 4in., at 4ft. from the floor; and one outlet in the ceiling, 2ft. 3in. \times 2ft. 0in.

The permanent inlet ventilation consists of two box tubes, 4in. \times 4in., 7ft. from the floor, or 32 sq. in., and one Sherringham valve, 4ft. from the floor, 12in. \times 4in., or 48 sq. in. The total area of permanent inlet ventilation is 80 sq. in., thus allowing 1.0 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, 2ft. 3in. \times 2ft. 0in., or 648 sq. in., thus allowing 8.7 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 90 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left and right.

There are four incandescent lights for artificial lighting.

Room No. 10.

This room measures 32ft. 6in. \times 15ft. 6in., or 503 sq. ft., and the average number of children present during September, 1903, was 70, thus allowing 7.1 sq. ft. of floor space per head. The total cubic capacity is 10,075 cubic feet, or 143.9 cubic feet per head.

Ventilation. The ventilation consists of five hopper windows, 1ft. 3in. \times 1ft. 6in.; one outlet in the ceiling, 2ft. 3in. \times 2ft. 3in., and 38 circular holes in an iron plate in the chimney-breast, $\frac{1}{2}$ in. in diameter.

The permanent outlet ventilation consists of the outlet in the ceiling, 2ft. 3in. \times 2ft. 3in., and 38 circular openings in the chimney-breast. The total area of permanent outlet ventilation is 736 sq. in., thus allowing 10.5 sq. in. per head. There is also an open fire-grate, without guard.

There is no permanent inlet ventilation, and there is slight cross ventilation.

Lighting. The total lighting area is 91 sq. ft., which is equal to one-fifth of the floor space.

The light is received from the left and behind.

There are four incandescent lights.

Room No. 12.

This is the infants' main room, and measures 38ft. 9in. \times 32ft. 8in., or 1,266 sq. ft. The average number of infants present during June, 1903, was 114, thus allowing 11.1 sq. ft. of floor space per head. The total cubic capacity is 25,316 cubic feet, or 222.0 cubic feet per head.

Ventilation. The ventilation consists of six upper hopper windows, 1ft. 3in. \times 1ft. 3in.; one outlet in the ceiling over a gas pendant, 2ft. in diameter.

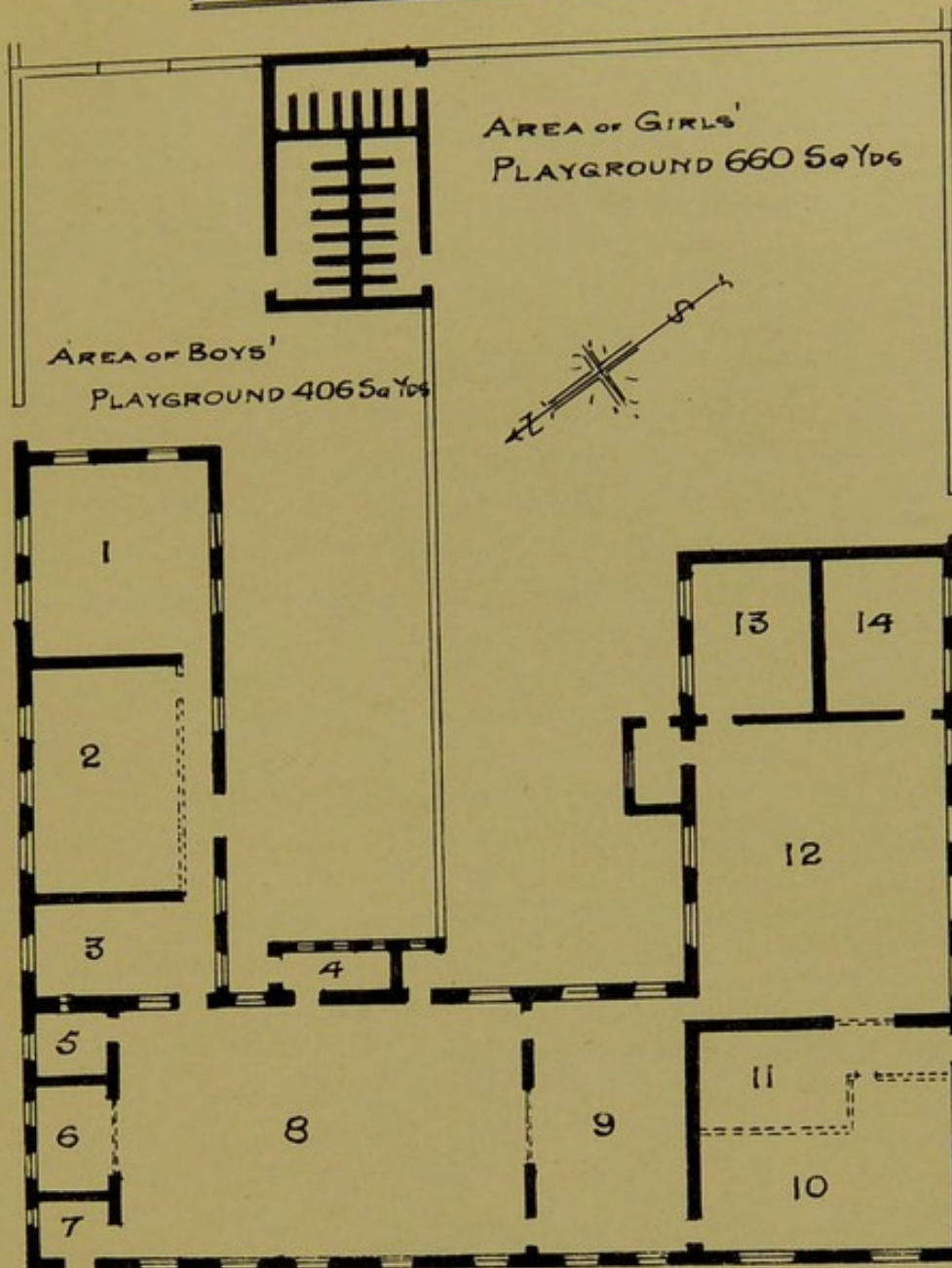
There are two permanent inlet ventilators (each 1 $\frac{1}{4}$ in. \times 8in.), or 10sq. in., thus allowing .09 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, 2ft. in diameter, or 453 sq. in., thus allowing 4 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 151 sq. ft., which is equal to one-eighth of the floor space.

— EMMANUEL SCHOOL —



Scale 30 feet to 1 inch

Room marked.		Average height.	Cubic feet.
1	25' 0" x 24' 0"	16' 0"	= 9600
2	30' 0" x 19' 6"	16' 0"	= 9360
3	24' 0" x 12' 0"	16' 0"	= 4608
4	15' 0" x 6' 0"		
5	10' 0" x 8' 3"	16' 0"	= 1320
6	10' 0" x 14' 0"	16' 0"	= 2240
7	10' 0" x 8' 3"	16' 0"	= 1320
8	54' 0" x 32' 9"	20' 0"	= 35370
9	20' 0" x 32' 9"	20' 0"	= 13100
10	32' 6" x 15' 6"	20' 0"	= 10075
11	19' 6" x 11' 9"	20' 0"	= 4582
12	38' 9" x 32' 8"	20' 0"	= 25316
13	20' 0" x 16' 3"	20' 0"	= 6500
14	20' 0" x 16' 0"	20' 0"	= 6400



The light for one class is received from behind and the front, and for the other class from the left and right.

There are four incandescent lights.

Room No. 13.

This is an infants' class-room, measuring 20ft. 0in. \times 16ft. 3in., or 325 sq. ft., and the average number present during, June, 1903, was 31, thus allowing 10.5 sq. ft., of floor space per head. The total cubic capacity is 6,500 cubic feet, or 209.6 cubic feet per head.

Ventilation. The ventilation consists of two upper hopper windows, 1ft. 3in. \times 1ft. 3in.; two Tobin's tubes, 8in. \times 5in., at a height of 5ft. 9in. from the floor; one outlet in the wall, 1ft. 3in. \times 12in., near the ceiling; and one Sherringham valve, 9in. \times 6in., 4ft. 6in. from the floor.

The permanent inlet ventilation consists of two Tobin's tubes, and one Sherringham valve, or 134 sq. in., thus allowing 4.3 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the wall, near the ceiling, or 180 sq. in., thus allowing 5.8 sq. in. per head.

There is no cross ventilation.

Lighting. The total lighting area is 50 sq. ft., which is equal to one-sixth of the floor space.

The light is received from the right.

There are six gas jets.

Room No. 14.

This room measures, 20ft. \times 16ft., or 320 sq. ft., and the average number of infants present during June, 1903, was about 60, thus allowing 5.3 sq. ft. of floor space per head. This average is not always constant, on account of the changing of classes. The total cubic capacity is 6,400 cubic feet, or 106.6 cubic feet per head.

Ventilation. The ventilation consists of two hopper windows opening 1ft. 3in. \times 1ft. 3in.; one Tobin's tube, 9in. \times 4in., 7ft. from the floor, and one outlet (1ft. 3in. \times 12in.) near the ceiling.

The permanent inlet ventilation consists of one Tobin's tube, 9in. \times 4in., or 36 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the wall, near the ceiling, or 180 sq. in., thus allowing 3 sq. in. per head.

There is no cross ventilation.

The total lighting area is 50 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left.

There are four gas jets.

Recommendations.

- I. To improve the cloak-room accommodation for boys and girls.
- II. To arrange that the number of scholars in Rooms, 1, 10, 14, 2, and 9 shall not exceed 60, 50, 35, 58 and 65, respectively.
- III. To improve the inlet ventilation openings in Rooms 9, 10, 12, and 14.

MILL HILL SCHOOL

NEW CHAPEL STREET.

This school was erected in 1847, and a recent addition has been made. It is constructed of brick, and the old school is in fair condition.

The schools are situated in New Chapel Street, Mill Hill. The entrance to the girls' school (which is the new portion) is in St. Matthew's Street.

Playgrounds.

There are three playgrounds; one for the boys, measuring 437 sq. yds.; one for girls, 418 sq. yds., and one for infants, 230 sq. yds. These playgrounds are completely separated from each other.

There is a covered playground for the boys, and one for girls, each measuring about 7yds. \times 3yds.

The girls' playground is unflagged except a passage from the gate to the entrance of the school. The boys' playground is also unflagged except at one side—adjoining College Street. The surface is covered with ashes.

The infants' playground is well flagged, and slopes towards a surface gully.

There is no covered playground for the infants.

Sanitary Conveniences.

The girls' and boys' sanitary conveniences are about 7 yds. away from the nearest window, and 10 yds. from the door, and are built back to back.

The Girls'

There are nine compartments for the girls, and one for the teachers, and five with one for the male teachers in the boys' series.

Each compartment measures 2ft. 6in. x 2ft. 3in., and is well lighted and ventilated. There is a passage 3ft. 6in. wide in front of these compartments, not open to the external air above.

The floors are concreted, and slope to a surface gully.

The type of conveniences is Adams' pedestal w.c., and each basin is flushed separately.

The Boys'

The boys' conveniences are flushed by a 15-gallon automatic cistern, and the girls' are flushed by two cisterns; four of the pedestals by a 15-gallon cistern, and six by a 20-gallon cistern. These conveniences are flushed twice a day.

There are 19 linear feet of urinals for the boys; constructed of brown glazed slabs, 3ft. from the floor, and a glazed earthenware channel leading to a properly trapped gully. These urinals are flushed by hand.

The Infants'

There are eight earthenware trough conveniences for the infants, situated against the boundary wall in New Chapel Street. Each compartment measures 1ft. 5in. to seat-board, and is 2ft. 0in. wide; there is a passage in front 3ft. wide, not open to the external air above. This series of closets is well lighted and ventilated. The surface of the floor and passage is flagged, and slopes to a properly trapped gully.

Drainage.

The drainage appears to be satisfactory. The downspouts are directly connected, and the waste pipes are not trapped.

Refuse.

There is an ash receptacle adjoining the girls' sanitary conveniences, and one adjoining the boys'. Both are placed under stone covers.

Heating.

The heating is carried out by hot water pipes.

Walls

The walls in the old school are boarded to a height of 3ft. 6in. from the floor, and painted brown, except in rooms Nos. 3, and 4 on the ground floor, and rooms 3 and 4, 1st floor, which are bricked up to a height of 3ft. 6in., and painted a chocolate colour; above this height the walls are rendered with plaster, and painted pale green.

Floors.

The floors of the old school are constructed of tongued and grooved boards, with a ventilated cavity underneath. The ground floor of the new school is constructed of tongued and grooved boards, laid on concrete. The floors are swept every night, and cleansed twice a year.

Cloak-Rooms.

There is a newly constructed cloak-room for the boys. It measures 30ft. \times 8ft., and is lighted by three windows—two, 4ft. 9in. \times 2ft. 10in., and one 3ft. 9in. \times 3ft. 8in., and two panes, 1ft. 7in. \times 1ft. 5in., open for ventilation. The floor is constructed of concrete.

There are 280 hooks placed on two racks, and against the walls.

The infants' cloak-room is in the new portion. It is a very large room, and is situated between the entrance to the infants' playground and the girls' playground. It is lighted by two windows, 4ft. 6in. \times 3ft. 0in.

There are about 170 hooks, placed on racks and against the walls. The cloak-room is warmed by hot water pipes. There is a cooking stove which is used by the teachers.

There are two cloakrooms for the girls. One is situated at the entrance to the infants' school from Matthew Street, on the ground floor. It is lighted by two windows, one 7ft. 0in. \times 4ft. 6in., and one 7ft. 0in. \times 2ft. 10in., two panes in which open for ventilation, one 2ft. 4in. \times 1ft. 5in., and one 2ft. 4in. \times 2ft. 3in.

There are 152 hooks, placed against the walls. The floor is concreted, and the room is heated by hot water pipes. The second cloak-room is situated in a room at the top of the staircase, and is lighted by three windows, two 5ft. 9in. \times 4ft. 2in., and one 5ft. 9in. \times 3ft. 6in., three panes in which open for ventilation, two 2ft. \times 2ft., and the other 2ft. 0in. \times 1ft. 10in.

There are 170 hooks placed against the walls. The floor is concreted, and the room is warmed by hot water pipes.

Lavatory Accommodation.

There are three brown glazed lavatory basins in the boys' cloak-room; the waste pipes discharge into one common pipe, and thence

over a gully. The waste pipes are not trapped.

There are three brown glazed lavatory basins in the infants' cloak room; the waste pipes discharging into one common pipe, and then over a gully in the infants' yard. The waste pipes are not trapped.

There are three brown glazed lavatory basins in the girls' cloak-room at the top of the staircase from the entrance in Matthew Street, of the same construction as the other lavatory basins.

There is also a white glazed sink, fitted with a drainer, in cookery class-room, the waste pipe of which is trapped and discharges into a downspout hopper head, and then over a gully.

BOYS' DEPARTMENT.

The boys occupy the old school, and there are one large room and four class-rooms on the ground floor, marked 1, 2, 3, 4 and 5 on the plan.

Room No. 1.

This is a boys' class-room, measuring 33ft. 9in. \times 16ft., or 540 sq. ft., and the average number present during September, 1903, was 43, thus allowing 12.5 sq. ft. of floor space per head. There is a wooden and glazed partition dividing this room from the large room. The total cubic capacity is 7,020 cubic feet, or 163.2 cubic feet per head.

Ventilation. The ventilation consists of three hopper windows, 2ft. 6in. \times 2ft. 4in., at a height of 10ft. from the floor; one Tobin's tube, 9in. \times 4in., at a height of 6ft. from the floor.

The permanent inlet ventilation consists of the Tobin's tube, or 36 sq. in., thus allowing .8 sq. in. per head.

There is no permanent outlet ventilation.

There is no cross ventilation.

Lighting The total lighting area is 77 sq. ft., which is equal to one-seventh of the floor space.

The light is from the left and behind.

There are eight naked gas jets.

The windows are composed of small panes.

Room No. 2.

This is the large schoolroom, measuring 42ft. 5in. \times 35ft. 9in., or 1,516 sq. ft., and the average number of boys present during September, 1903, was 35, thus allowing 43.3 sq. ft. of floor space per head. The total cubic capacity is 21,468 cubic feet, or 613.3 cubic feet per head.

Ventilation. The ventilation consists of six hopper windows, 2ft. 6in. \times 2ft. 4in., 10ft. from the floor.

There is no permanent ventilation, but the ventilation is cross.

Lighting. The total lighting area is 134 sq. ft., which is equal to one-eleventh of the floor space.

The light is from behind and the front.

There are 12 gas jets. The windows consist of squares, 9in. \times 14in.

Room No. 3.

This is a boys' class-room, measuring 23ft. 6in. \times 16ft. 6in., or 387 sq. ft., and the average number of boys present during September, 1903, was 35, thus allowing 11 sq. ft. of floor space per head. The total cubic capacity is 5,102 cubic feet, or 145.7 cubic feet per head.

Ventilation. The ventilation consists of four window openings 2ft. 2in. \times 2ft. 10in., without side shields. There are two wooden inlet tubes, 4½in. \times 3½in., at a height of 6ft. 6in. from the floor.

The permanent inlet ventilation consists of the two wooden tubes, or 32 sq. in., thus allowing .9 sq. in. per head.

The permanent outlet ventilation consists of two gratings in wall, 5in. \times 4in., or 40 sq. in., thus allowing 1.1 sq. in. per head.

There is slight cross ventilation.

Lighting. The total lighting area is 87 sq. ft., which is equal to one-fourth of the floor space.

The light is from the left and behind.

There are four gas jets.

Of the 87 sq. ft. of glass, 24 sq. ft. are semi-transparent.

Room No. 4.

This is a boys' class-room, measuring 22ft. 6in. \times 16ft. 6in., or 371 sq. ft., and the average number present during September, 1903, was 30, thus allowing 12.3 sq. ft. of floor space per head. The total cubic capacity is 4,885 cubic feet, or 162.8 cubic feet per head.

Ventilation. The ventilation consists of two window openings 2ft. 2in. \times 2ft. 10in., without side shields; one casement window; one box tube, 4½in. \times 3½in., 6ft. 6in. from the floor; one outlet in the wall, 1ft. 6in. \times 1ft. 6in., near the ceiling, and carried by a trunk through one corner of the large room, and through part of a window into the infants' playground.

The permanent inlet ventilation consists of one box tube, $4\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., or 16 sq. in., thus allowing .5 sq. in. per head.

The permanent outlet ventilation consists of the grating near the ceiling, or 324 sq. in., thus allowing 10.8 sq. in. per head.

Lighting. The total lighting area is 46 sq. ft., which is equal to one-eighth of the floor space.

The light is received from the left.

There are two gas jets.

This is the gallery room, the floor of which is broken in places, allowing accumulation of dust. The walls have recently been repaired.

Room No. 5.

This is a boys' classroom, measuring 28ft. 6in. \times 22ft., or 627 sq. ft., and the average number present during September, 1903, was 25, thus allowing 25 sq. ft. of floor space per head. The total cubic capacity is 8,251 cubic feet, or 330.0 cubic feet per head.

Ventilation.

The ventilation consists of one upper hopper window, 2ft. 2in. \times 2ft. 10in., and three window openings, 2ft. 2in. \times 2ft. 10in. on hinges; one wooden tube, $4\frac{1}{2}$ in. \times $3\frac{1}{2}$ in., 6ft. 6in. from the floor; five outlet gratings in the wall, near the ceiling, 6in. \times 9in.

The permanent inlet ventilation consists of the wooden tube, or 16 sq. in., thus allowing .6 sq. in. per head.

The permanent outlet ventilation consists of five gratings in outer walls, or 270 sq. in., thus allowing 10.8 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 83 sq. ft., which is equal to one-seventh of the floor space.

The light is received from the left and right.

INFANTS' DEPARTMENT.

The infants' department is situated on the ground floor, in the new building. There are three rooms, Nos. 6, 7, and 8.

Room No. 6.

Measures 31ft. 10in. \times 21ft. 10in., or 694 sq. ft., thus accommodating 69 children. The average number for this new school cannot be obtained, as it has only recently been opened.

The total cubic capacity is 10,304 cubic feet.

Ventilation. The ventilation consists of six upper hopper windows, four 2ft. 4in. \times 1ft. 4in., and two 1ft. \times 1ft. 2in.—these hopper windows are of little use, as they are almost cased in up to the window head; three Tobin's tubes, 10in. \times 4in., at a height of 5ft. 10in. from the floor; and one outlet in the ceiling, 1ft. 6in. \times 9in., leading to a cowl on the roof.

The permanent inlet ventilation consists of three Tobin's tubes, or 120 sq. in., thus allowing 1.7 sq. in. per head.

The permanent outlet ventilation consists of one outlet in the ceiling, 1ft. 6in. \times 9in., carried by a trunk under the upper floor, and up the wall side, and thence to a cowl on the roof. The total area of permanent outlet ventilation is 162 sq. in., thus allowing 2.3 sq. in. per head.

Lighting. The total lighting area is 153 sq. ft., which is equal to almost one-fourth of the floor space.

The light is received from behind, and the left.

There are five gas jets.

The lower panes of glass in the windows are semi-transparent.

Room No. 7.

This room has glazed slides on three sides, and the lower panes are semi-transparent, which diminish the light. The room measures 26ft. 6in. \times 21ft. 10in., or 578 sq. ft., thus accommodating 57 children. The total cubic capacity is 8,579 cubic feet.

Ventilation. The ventilation consists of two upper hopper windows, 2ft. 4in. \times 1ft. 4in., fixed as in No. 6 room; three Tobin's tubes, 10in. \times 4in., 5ft. 10in. from the floor; and one outlet in the ceiling, 1ft. 6in. \times 9in., leading to a cowl on the roof, in the same way as the one in No. 6 room.

The permanent inlet ventilation consists of three Tobin's tubes, or 120 sq. in., thus allowing 2.1 sq. in. per head.

The permanent outlet ventilation consists of the outlet in the ceiling, or 162 sq. in., thus allowing 2.8 sq. in. per head.

Lighting. The total lighting area is 63 sq. ft., which is equal to one-ninth of the floor space. Light is also received through the glass slides.

The light is received from the left, and right through the glass slides.

There are four gas jets.

Room No. 8.

Measures 32ft. 9in. \times 32ft., or 1,048 sq. ft., thus accommodating 104 children. The total cubic capacity is 15,541 cubic feet.

Ventilation. The ventilation consists of six upper hopper windows (2ft. 4in. \times 1ft. 4in.), of the same construction as those in room 6; three Tobin's tubes, 10in. \times 4in., and two gratings in an outside wall, near the ceiling (12in. \times 12in.).

The permanent inlet ventilation consists of three Tobin's tubes, or 120 sq. in., thus allowing 1.1 sq. in. per head.

The permanent outlet ventilation consists of two gratings in an outside wall, or 288 sq. in., thus allowing 2.7 sq. in. per head. If two similar ventilators were placed on the opposite outside wall, two would act as inlets and two as outlets.

There is cross ventilation.

Lighting. The total lighting area is 189 sq. ft., which is equal to one-fifth of the floor space.

The lower panes are semi-transparent glass.

There are eight gas jets.

FIRST FLOOR.

The girls occupy this floor. There are four rooms, and the room for the cookery class. Nos. 9, 11, 12, class-rooms, are in the old building, and Nos. 13 and 14 are in the new building.

Room No. 9.

This is the girls' cookery class-room, measuring 33ft. 9in. \times 34ft. 10in., or 1,175 sq. ft., and the maximum number present at any time is 54, thus allowing 21.7 sq. ft. of floor space per head. The total cubic capacity is 15,870 cubic feet, or 293.9 cubic feet per head.

Ventilation. The ventilation consists of five hopper windows, 2ft. \times 2ft. 9in., 8ft. from the floor; two outlets over gas pendants, 2ft. 3in. \times 2in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of the two openings over gas pendants, or 108 sq. in., thus allowing 2 sq. in. per head.

There is cross ventilation.

Lighting. The total lighting area is 163 sq. ft., which is equal to one-seventh of the floor space. The windows are composed of small square panes.

The light is from the left, right and behind.

There are ten gas jets.

This room is separated from No. 10 room by a glazed partition. No. 10 room is not a day class-room, being only used on Sundays.

Room No. 11

Is the girls' class-room measuring 23ft. 6in. \times 16ft. 6in., or 388 sq. ft., and thus accommodating 38 scholars. The average number cannot be obtained for the girls as they have recently changed into the new school. The total cubic capacity is 5,460 cubic feet.

Ventilation. The ventilation consists of two hopper windows; two box tubes, 4½in. \times 3½in., 5ft. 10in. from the floor; one grating in the ceiling, 2ft. \times 1ft.; one grating in the wall, near the ceiling, leading into a cavity (9in. \times 6in.), and one in outer wall, 5in. \times 6in.

The permanent inlet ventilation consists of two box tubes, or 32 sq. in., thus allowing .8 sq. in. per head.

The permanent outlet ventilation consists of the grating in the ceiling, a grating in the cavity wall near the ceiling, and one in external wall. The total area of permanent outlet ventilation is 372 sq. in., thus allowing 9.7 sq. in. per head.

There is slight cross ventilation.

Lighting. The total lighting area is 72 sq. ft., which is equal to one-fifth of the floor space.

Of the 72 sq. ft. of glass 23 sq. ft. are frosted.

The light is from the left and behind.

There are two naked gas jets.

Room No. 12

Is a girls' class-room, measuring 22ft. 6in. \times 16ft. 6in., or 371 sq. ft., and thus accommodating 37 scholars.

The total cubic capacity is 5,475 cubic feet.

Ventilation. The ventilation consists of one upper hopper window, 3ft. \times 2ft., and two opening on side hinges, 1ft. 2in. \times 1ft. 4in.; one grating in the wall near the ceiling, 5in. \times 3in., and one outlet in the ceiling, 2ft. \times 1ft.

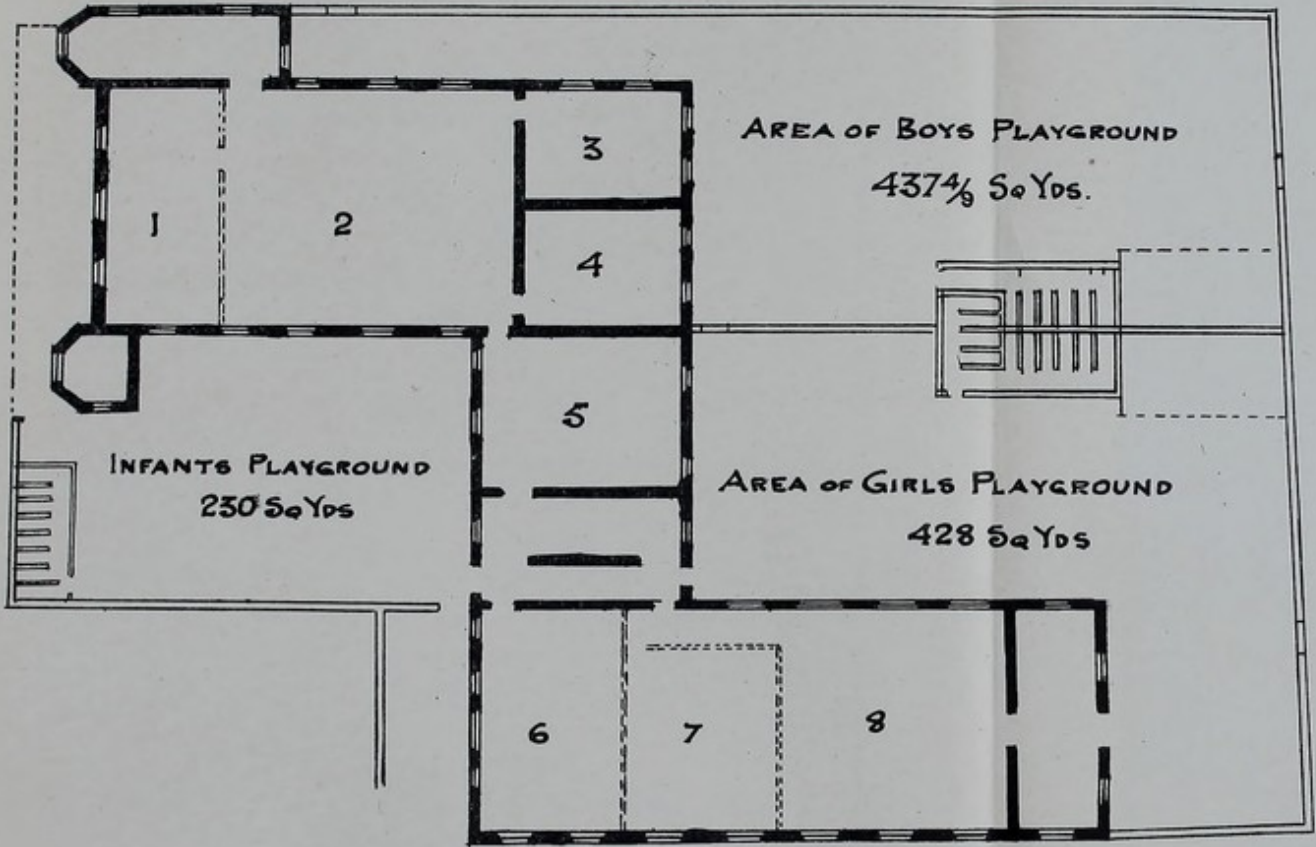
The permanent inlet ventilation consists of one Tobin's tube, 4½in. \times 3½in., at 6ft. 6in. from the floor, thus allowing .4 sq. in. per head.

The permanent outlet ventilation consists of one grating in the wall, near the ceiling, and one outlet in the ceiling. The total area

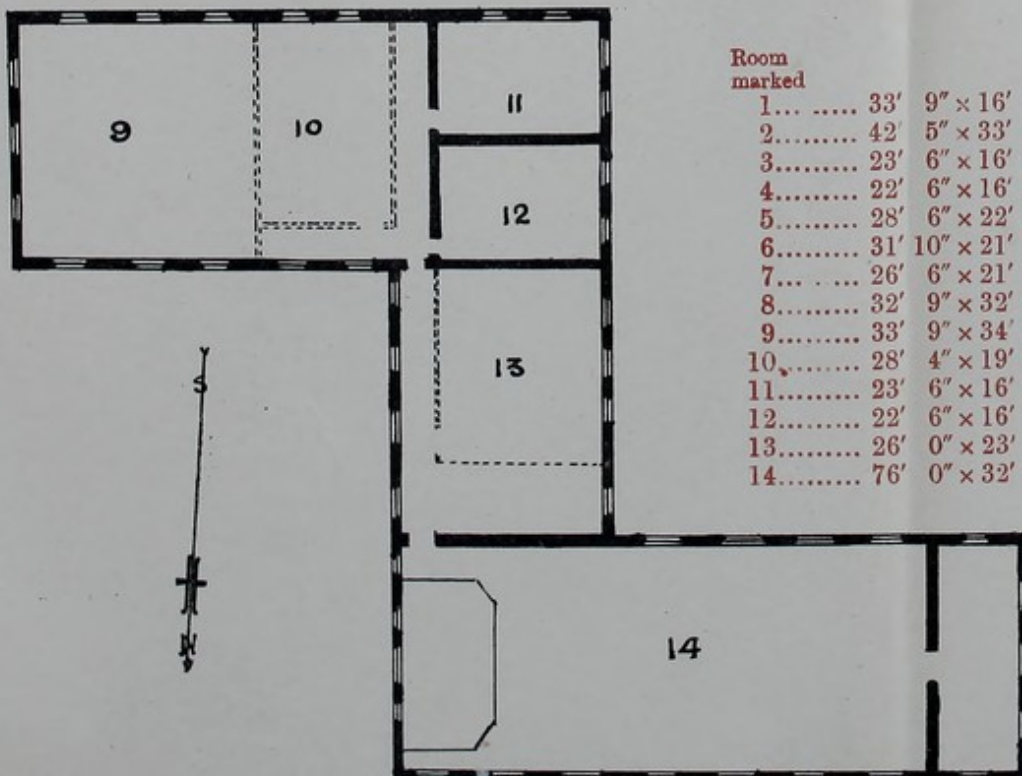
CONGREGATIONAL SCHOOL

MILL HILL

Scale 30 feet to 1 inch



GROUND FLOOR PLAN



Room marked		Average height.	Cubic feet.
1.....	33' 9" x 16' 0"	13' 0"	= 7020
2.....	42' 5" x 33' 9"	14' 2"	= 21468
3.....	23' 6" x 16' 6"	13' 2"	= 5102
4.....	22' 6" x 16' 6"	13' 2"	= 4885
5.....	28' 6" x 22' 0"	13' 2"	= 8251
6.....	31' 10" x 21' 10"	14' 10"	= 10304
7.....	26' 6" x 21' 10"	14' 10"	= 8579
8.....	32' 9" x 32' 0"	14' 10"	= 15541
9.....	33' 9" x 34' 10"	13' 6"	= 15870
10.....	28' 4" x 19' 0"	13' 6"	= 7267
11.....	23' 6" x 16' 6"	14' 1"	= 5460
12.....	22' 6" x 16' 6"	14' 9"	= 5475
13.....	26' 0" x 23' 0"	14' 9"	= 8820
14.....	76' 0" x 32' 0"	18' 6"	= 44992

FIRST FLOOR PLAN.



of permanent outlet ventilation is 303 sq. in., thus allowing 8.1 sq. in. per head.

There is no cross ventilation.

Lighting. The total area of lighting is 36 sq. ft., which is equal to one-tenth of the floor space.

The light is received from the left.

There are two gas jets.

Room No. 13.

This is a girls' class-room, measuring 26ft. \times 23ft., or 598 sq. ft., and thus accommodating 59 girls. The total cubic capacity is 8,820 cubic feet.

Ventilation. There is one upper window opening without side shields, 2ft. 0in. \times 3ft. 0in.; one grating in the ceiling, 2ft. \times 1ft., and two box tubes, 4½in. \times 3½in., at a height of 5ft. 10in. from the floor. There are also two casements, 1ft. 7in. \times 2ft. 0in.

The permanent inlet ventilation consists of the two box tubes, or 52 sq. in., thus allowing .5 sq. in. per head.

The permanent outlet ventilation consists of the grating in the ceiling, or 288 sq. in., thus allowing 4.8 sq. in. per head.

There are also two windows opening in the upper part of the glazed partition of this room, which forms one side of the passage. In this way partial cross ventilation is possible.

Lighting. The total lighting area is 54 sq. ft., which is equal to one-eleventh of the floor space.

The light is from the left. Light is also received from windows on the landing through the glass slides.

Of the 54 sq. ft. of glass, 8 sq. ft. are semi-transparent, and 6 sq. ft. are frosted.

Room No. 14.

This is the girls' large room, measuring 76ft. \times 32ft. 0in., or 2,432 sq. ft., thus accommodating 243 girls. The total cubic capacity is 44,992 cubic feet.

This room is also used on Sundays.

Ventilation. The ventilation consists of 15 windows opening without shields; 11 Tobin's tubes, 10in. \times 4in., 5ft. 10in. from the floor; and two circular openings in the ceiling, leading to a Boyle's ventilator on the roof, 2ft. 3in. in diameter.

The permanent inlet ventilation consists of 11 Tobin's tubes, or 440 sq. in., thus allowing 1.8 sq. in. per head.

The permanent outlet ventilation consists of two circular openings in the ceiling, or 572 sq. in., thus allowing 2.3 sq. in. per head.

Lighting. The total lighting area is 467 sq. ft., which is equal to one-fifth of the floor space.

Of the 467 sq. ft. of glass 222 sq. ft. are semi-transparent.

There are 27 gas jets.

There is a platform in this room.

The light is received from left and right. There is also a window for the platform.

Recommendations.

- I. To improve the ventilation openings where necessary.
- II. To improve the lighting in No. 2 Room.

MILL HILL SCHOOL

NORFOLK STREET.

This school was erected in 1895, and used as a day school for the first time on May 2nd, 1898. It is a brick building, and is in excellent condition.

Playgrounds.

There is one common playground for boys, girls, and infants, and its total area is 556 sq. yds.

The ground is partly flagged, the flagged portion being in front of the entrance to the cellar, about 51 sq. yds.; the remainder is unflagged, but is in fairly good repair.

The surface of the ground slopes slightly away from the school.

There is a large piece of land adjoining the school which belongs to the school, and this also is used by the scholars as a playground, but is not fenced off.

Sanitary Conveniences

The boys' sanitary conveniences are situated against the boundary wall in Zebudah street. They consist of eight compartments, one of which is used by the teachers. Each compartment is 2ft. 9in. x 2ft. 4in.; the doors have been left 4in. short at the top for ventilation.

There is a passage in front of these compartments, 4ft. wide, open to the external air. The floors of the compartments, and passage are

flagged and slope to a channel leading to a properly trapped gully.

There are four pedestals and four short hopper conveniences for boys; the pedestals are flushed when used, by a syphon cistern overhead; the short hoppers are flushed twice a day by an automatic cistern, 20 gallons. There are no urinals, and the seatboards on the pedestals are fixed, otherwise these could be used as urinals.

These conveniences are 4ft. from the class-room No. 5.

For girls there are eight pedestal w.c.'s, and a syphon cistern placed over each. They are flushed when used. Each compartment measures 2ft. 9in. \times 2ft. 4in., and there is a passage 4ft. wide in front, open to the external air. In this passage is a ventilating shaft carried up the same height as the face wall, 8ft. high, to ventilate the drains. The floor of the compartments and the passage are well-flagged, and slope to a properly trapped gully. The doors of the compartments have been left 6in. short for ventilation and lighting.

These conveniences are 10 yds. distant from the nearest door or window.

Drainage.

The drainage appears to be satisfactory. The downspouts are partly connected and partly disconnected.

Refuse.

There is no receptacle, the refuse being placed on the roads.

Cloak-Rooms.

The room intended for the cloak-room for the mixed school, and marked No. 6 on plan, is now used as a class-room. Sanction has been obtained from H.M. Inspector to use this room temporarily as a class-room. The cellar has now been made into a cloak-room. This place is lighted by one window, 4ft. 9in. \times 3ft.—1ft. 7in. \times 1ft. 6in. of which opens for ventilation. The heating apparatus is in this cellar.

There are about 100 hooks placed on two racks, and against the walls.

There are two cloak-rooms for the infants, each measuring 24ft. \times 4ft. 6in., and lighted by four windows, 2ft. 2in. \times 2ft. 2in.—two of which open for ventilation.

There are 158 hooks in both the cloak-rooms placed against the walls. The walls are constructed of brick, the floor of concrete.

These two cloak-rooms are situated at the entrance of the infants' school; one room on the right side of the entrance, and one on the left side.

Lavatory Accommodation.

There is a brown earthenware lavatory basin in each of the infants' cloak-rooms, the waste pipes of which are trapped, and discharge over gullies in the playground.

There is also a brown earthenware lavatory basin in a porch at the entrance to the cellar, the waste pipe of which is trapped and discharges over an outside gully.

Heating.

The heating of the school is carried out by means of hot water pipes, which are placed about 2ft. above the floor level.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. The floor of room No. 5 is constructed of concrete, having been intended for a cloak-room. The floors are not very clean, and it is stated that they have not been washed for the last 2½ years. They are swept every night.

Walls.

The walls are boarded round to a height of about 5ft. from the floor, and above this height they are plastered. The walls in the infants' room are not painted, having been erected in 1902. The walls in the mixed school are painted a pea-green colour.

There is no evidence of dampness.

There are six rooms in this school. Nos. 1 and 3 are used for the infants, and Nos. 2, 4, 5 and 6 for the mixed.

Rooms Nos. 1 and 3.

These rooms are used by the infants, and measure 24ft. 9in. × 24ft. 6in., or 606 sq. ft. The average number of children present in each room during the month of June, 1903, was 60, thus allowing 10.1 sq. ft. per head. The total cubic capacity is 9,701 cubic feet, or 161.6 cubic feet per head.

Ventilation. The ventilation of No. 3 room consists of three casement windows, 5ft. 8in. × 1ft. 6in.; three windows opening on hinges, without side shields, 1ft. 6in. × 1ft. 9in.; and two, 2ft. 6in. × 1ft. 6in. There are seven ventilating openings in the window-sills, 1ft. 6in. × 4in., and one 4ft. 6in. × 4in. The air from these ventilators is discharged into the rooms 5ft. from the floor, and is warmed by the hot water pipes. There is an outlet in the ceiling, 2ft. × 2ft.

The permanent inlet ventilation consists of eight window-sill ventilators, having an area of 720 sq. in., thus allowing 12 sq. in. per head and the permanent outlet ventilation consists of one outlet in the ceiling, 2ft. \times 2ft., or 576 sq. in., thus allowing 9.6 sq. in. per head.

The ventilation of No. 1 Room consists of one casement window, 5ft. 8in. \times 1ft. 6in.; three opening on hinges, 1ft. 6in. \times 1ft. 9in., and two, 2ft. 6in. \times 1ft. 6in.; six ventilators in window-sills—two, 2ft. 6in. \times 4in., and four 1ft. 6in. \times 4in.

The permanent inlet ventilation consists of the six window-sill ventilators, or 528 sq. in., thus allowing 8.8 sq. in. per head, and the permanent outlet ventilation consists of one outlet in the ceiling, 2ft. \times 2ft., or 576 sq. in., thus allowing 9.6 sq. in. per head.

Lighting. The total lighting area is 96 sq. ft., which is equal to one-sixth of the floor space.

The light is from the left, right, and slightly in front.

The glass is clear.

There are eight naked gas jets.

Room No. 4.

This is the main room, and measures 43ft. \times 24ft., or 1,032 sq. ft. The average number of children present during the month of September, 1903, was 75, thus allowing 13.7 sq. ft. of floor space per head. The total cubic capacity is 16,340 cubic feet, or 217.8 cubic feet per head.

Ventilation. The ventilation consists of six casement windows opening 4ft. 6in. \times 2ft. 2in., and six upper window openings 1ft. 8in. \times 1ft. 8in., without side shields. There are 16 inlet ventilators in the window-sills, 1ft. 6in. \times 4in., and two outlet openings in the ceiling, 2ft. \times 2ft.

The permanent inlet ventilation consists of 16 inlet ventilators in window-sills (discharging warm air into the room), having a total area of 1,152 sq. in., or 15.3 sq. in. per head.

The permanent outlet ventilation consists of two openings in the ceiling, or 1,152 sq. in., thus allowing 15.3 sq. in. per head.

Lighting. The total lighting area is 210 sq. ft., which is nearly one-fifth of the floor space.

The light is received from behind and the front.

Room No. 5.

This room is separated from the main room by glazed slides, and measures 24ft. \times 20ft. 6in., or 492 sq. ft. The average number of children present during September, 1903, was 41, thus allowing 12.0 sq. ft. of floor space per head. The total cubic capacity is 7,790 cubic feet or 190 cubic feet per head.

Ventilation. There are four casement windows, measuring 4ft. 6in. \times 2ft. 2in., and four upper window openings without side shields, 1ft. 8in. \times 1ft. 8in. There are seven inlet ventilators in the window-sills, 1ft. 6in. \times 4in., and one outlet ventilator in the ceiling, 2ft. 0in. \times 2ft. 0in.

The permanent inlet ventilation consists of seven inlets in window-sills, discharging warm air into the room, having an area of 504 sq. in., or 12.3 sq. in. per head.

The permanent outlet ventilation consists of the opening in the ceiling, or 576 sq. in., this being equal to 14.0 sq. in. per head.

Lighting. There are 103 sq. ft. of lighting in this room, which is equal to one-fourth of the floor space.

The light is received from the left, right, and also behind, through the glazed slides.

There are 12 gas jets.

Room No. 2.

This room measures 18ft. 10in. \times 17ft. 8in., or 332 sq. ft. The average number of children present during September, 1903, was 31, thus allowing 10.7 sq. ft. of floor space per head. The total cubic capacity is 3,990 cubic feet, or 128.7 cubic feet per head.

Ventilation. The ventilation consists of three upper window openings without side shields, 1ft. 6in. \times 1ft. 7in., and three casement windows, 4ft. 9in. \times 1ft. 9in.; eight inlets in window-sills, 1ft. 6in. \times 4in., and one outlet in the ceiling, 2ft. \times 2ft.

The permanent inlet ventilation consists of eight inlet ventilators in the window-sills, 1ft. 6in. \times 4in., or 576 sq. in., this being equal to 18.5 sq. in. per head.

The permanent outlet ventilation consists of one opening in ceiling, 2ft. \times 2ft., or 576 sq. in., this being equal to 18.5 sq. in. per head.

Lighting. The total lighting area is 70 sq. ft., this being equal to one-fourth of the floor space.

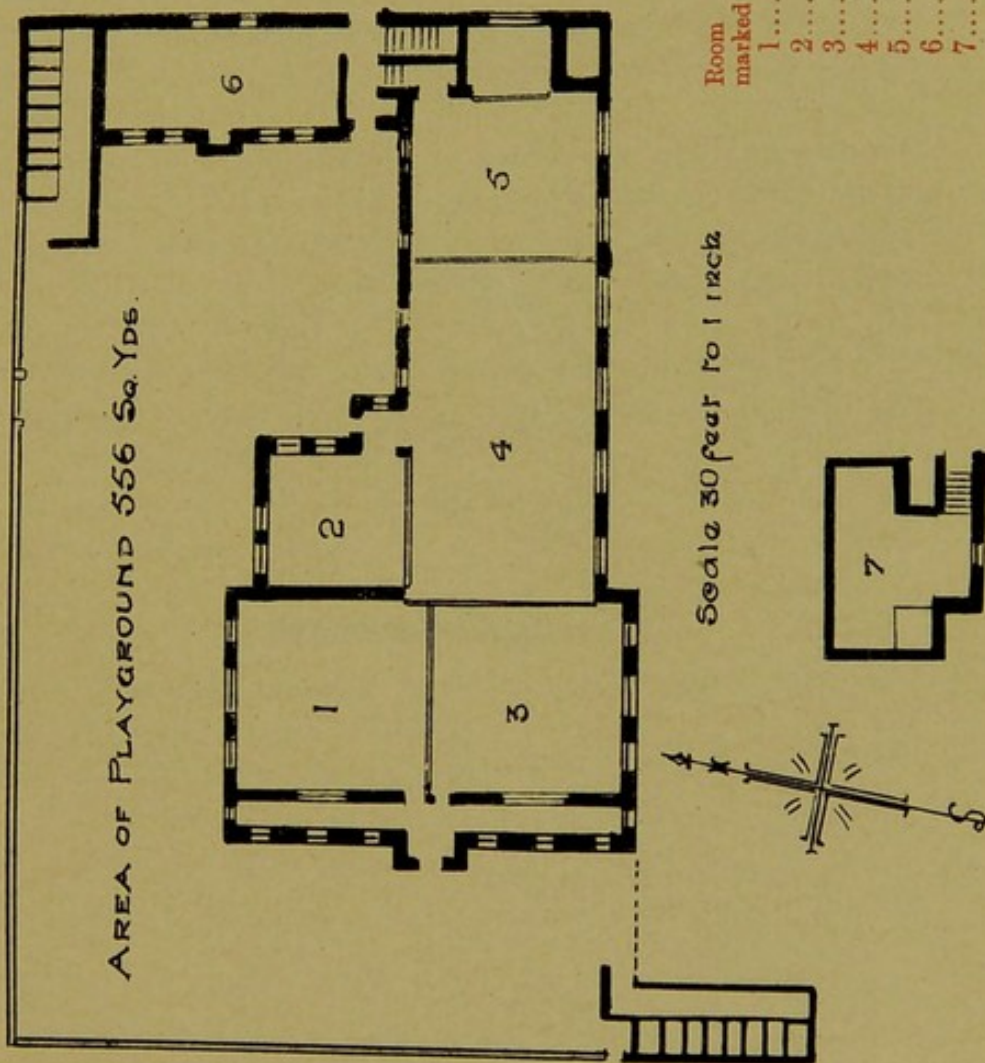
The light is received from the right and the front.

There are four naked gas jets.

NORFOLK ST. SCHOOL MILL HILL

ZEBUDAH ST.

AREA OF PLAYGROUND 556 Sq. Yds.



Room marked	Dimensions	Average height.	Cubic feet.
1.....	24' 9" x 24'	6" x 16' 0"	= 9701
2.....	18' 10" x 17'	8" x 12' 0"	= 3990
3.....	24' 9" x 24'	6" x 16' 0"	= 9701
4.....	43' 0" x 24'	0" x 15' 10"	= 16340
5.....	24' 0" x 20'	6" x 15' 10"	= 7790
6.....	30' 0" x 13'	6" x 12' 0"	= 4860
7.....	23' 0" x 16' 10"		

Scale 30 feet to 1 inch



Room No. 6.

As previously stated this is only a temporary class-room. The size of the room is 30ft. \times 13½ft., or 405 sq. ft. The average number of children present during the month of September, 1903, was 41, thus allowing 9.9 sq. ft. of floor space per head.

The total cubic capacity is 4,860 cubic feet, or 118.5 cubic feet per head.

Ventilation. Twenty-one sq. ft. of window space will open for ventilation. There are four upper window openings, without side-shields, and two casement windows. There are also eight ventilating openings in the window-sills, 1ft. 2in. \times 4in., and one outlet in the ceiling, 2ft. 4in. \times 2ft. 4in.

The permanent inlet ventilation consists of eight openings in window-sills, or 448 sq. in., this being equal to 10.9 sq. in. per head.

The permanent outlet ventilation consists of one opening in the ceiling, 2ft. 4in. \times 2ft. 4in., or 784 sq. in., this being equal to 19.1 sq. in. per head.

There is also a fireplace in this room, without fireguard.

Lighting. There are 73 sq. ft. of lighting in this room, or one-fifth of the floor space.

The light is received from the left and right.

There are 12 gas jets.

Recommendations.

- I. To provide a suitable receptacle for dry ashes.
- II. To fix a fireguard in Room 6.
- III. To provide urinal accommodation.

ST. ANDREW'S SCHOOL.

This school was built in 1849. It is a one storey building of stone, in good condition, and situated on an open site in Livesey Branch Road.

Playground.

The playground contains about 704 sq. yds. Only about 22 sq. yds. are flagged; the remaining portion is unflagged. The portion flagged is in front of the entrance. The playground occupies the space round the school, and is used by all the scholars. There is no covered playground.

The ground behind slopes towards the school, and the surface water is not drained away.

Sanitary Conveniences.

The sanitary conveniences consist of brown earthenware troughs (Merrill's). There are five compartments for the boys, each measuring 3ft. x 2ft. 6in. The compartments are ventilated over the door 23in. x 5in.

There is a passage in front of the conveniences, 3ft. 4in. wide, and a face wall, 6ft. 6in. high, and the floors of the conveniences and passages are flagged; the surface water drains on to the surface of the yard. There are no easing troughs fixed to the conveniences for carrying away rain water from roof.

There are 14 linear feet of urinals for the boys, constructed opposite the boys' compartments, and in six divisions; the back of the urinals is rendered with cement up to a height of 3ft. from the floor. The floor is flagged and a channel formed leading to a properly trapped gully. The flushing is done by hand.

Attached to this series of closets there is a compartment in which a lavatory is placed for the use of the teachers, the waste pipe is not trapped, but discharges over a gully in the yard. The conveniences are 16ft. from the nearest school door or window.

The girls' conveniences consist of six compartments constructed exactly as the boys' and a compartment in which there is a lavatory basin; the waste pipe is not trapped but discharges over a gully in yard.

There are no special conveniences for the infants.

Refuse.

There is an ash-pit adjoining the girls' conveniences, the cubic capacity of which is 5ft. \times 5ft. \times 5ft., or 125 cubic feet. It is covered over by a large flag, and is emptied from outside the school premises.

Cloak-Rooms.

There are three cloak-rooms: two for the mixed department and one for the infants'. The hooks are placed against the walls. There is a window in each room, 2ft. 8in. \times 4ft. 0in., of which 2ft. 8in. \times 1ft. 4in. will open for ventilation. The floors are flagged.

The infants' cloak-room measures 18ft. \times 6ft., and is lighted by two windows, 5ft. \times 2ft. 10in.—4ft. 6in. \times 2ft. 2in. of which will open.

There are 150 hooks placed against the walls.

The floor of this cloak-room is boarded.

Heating.

The heating is carried out by means of hot water pipes.

Floors.

The floors are constructed of tongued and grooved boards, with a ventilated cavity underneath. They are swept every night and washed three times a year.

Walls.

The walls are rendered with plaster, and painted pink.

One wall in class-room 3 is damp, owing to a defective skylight. The ceiling is also out of repair.

This school consists of four rooms: Nos. 1 and 2 are used by the mixed department, and Nos. 3 and 4 by the infants.

MIXED DEPARTMENT.—Room No. 1.

Measures 36ft. \times 22ft. 4in., or 804 sq. ft., and the average number of children present during September, 1903, was 77.7, thus allowing 10.3 sq. ft. per head. The total cubic capacity is 14,472 cubic feet, or 186.2 cubic feet per head.

Ventilation The ventilation consists of three upper hopper windows, and two opening on hinges; two Sherringham valves near the ceiling (6in. \times 5in.), and two outlets in the ceiling (3ft. \times 1ft. 3in.), or 1,140 sq. in., which is equal to 14.8 sq. in. per head. One grating, 6in. \times 4in., communicates with No. 2 room. There is no permanent inlet ventilation.

Lighting. This room is lighted by means of five windows having an area of 95 sq. ft., or one-eighth of the floor space.

The light is received from the left and behind.

The glass is clear transparent.

There are eight gas jets.

Room No. 2.

This is the large room, and measures 50ft. 4in. \times 25ft. 2in., or 1,266 sq. ft. The average number of children present during the month of September, 1903, was 117, thus allowing 10.8 sq. ft. of floor space per head. The total cubic capacity is 22,801 cubic feet, or 194.8 cubic feet per head.

Ventilation. The ventilation consists of four windows, which will open on swivels; two, 2ft. 9in. \times 4ft. 6in., two 1ft. 6in. \times 1ft. 6in. and one hopper window, 1ft. 6in. \times 9in.; two Sherringham valves, 6in. \times 5in., 12ft. from the floor, and four outlets in the ceiling, 3ft. \times 2ft. (which can be opened and closed by a cord).

There are no permanent inlet ventilators, and the ventilation is not cross.

The permanent outlet ventilation consists of two Sherringham valves, and four outlets in the ceiling, or 3,516 sq. in., or 30.0 sq. in. per head.

Lighting. This room is lighted by five windows, two of which are in the roof. The total lighting area is 130 sq. ft., which is equal to one-ninth of the floor space.

The light is received from the left and from above.

The glass is transparent.

There are 20 gas jets.

INFANTS' DEPARTMENT.—Room No. 3.

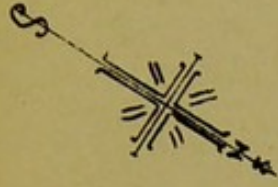
Measures 28ft. 8in. \times 25ft. 2in., or 721 sq. ft. The average number of children present during June, 1903, was 85.4, thus allowing 8.4 sq. ft. of floor space per head. The total cubic capacity is 12,986 cubic feet, or 152.0 cubic feet per head.

Ventilation Consists of four upper window openings without side shields, 2ft. 7in. \times 1ft. 3in.; two Sherringham valves, 6in. \times 5in., 12ft. from floor, and two outlets in the ceiling, 3ft. \times 2ft. 6in., (which can be opened and closed by a cord).

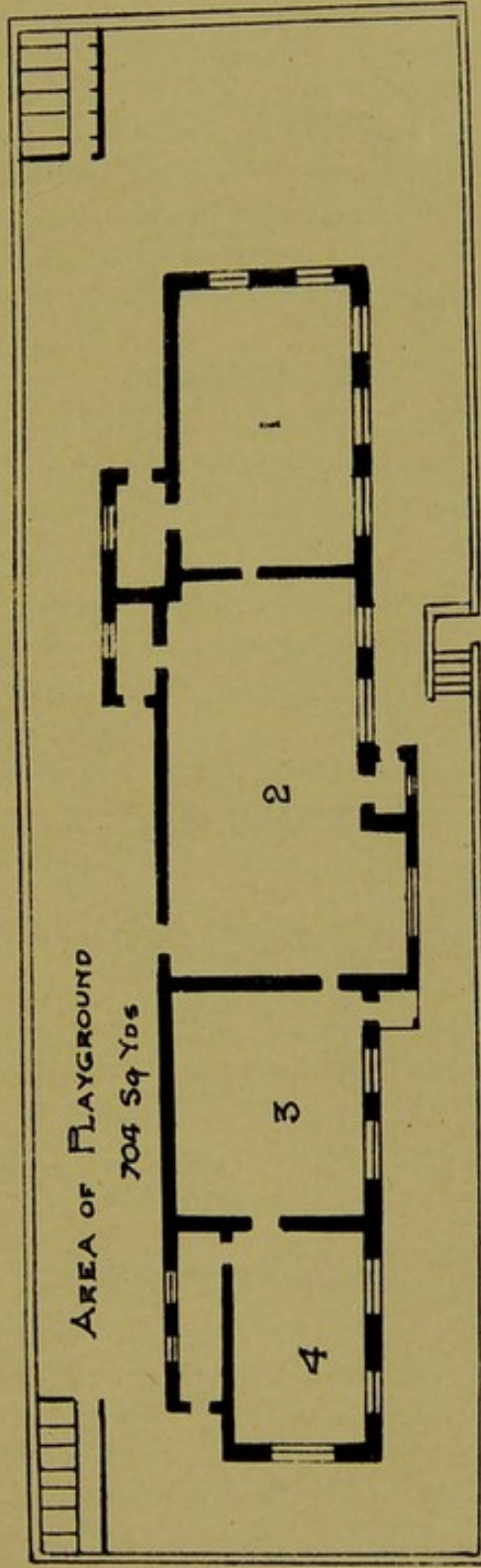
The total area of permanent outlet ventilation is 2,220 sq. in., thus allowing 25.9 sq. in. per head.

There is no permanent inlet ventilation.

There is slight cross ventilation.



ST. ANDREW'S SCHOOL



LIVESEY BRANCH ROAD

Scale 30 feet to 1 inch

Room marked.	Average height.	Cubic feet.
1	36' 0" x 22' 4" x 18' 0"	14472
2	50' 4" x 25' 2" x 18' 0"	22801
3	28' 8" x 25' 2" x 18' 0"	12986
4	27' 4" x 17' 8" x 17' 0"	8209



Lighting. There are five windows in this room, having an area of 83 sq. ft., which is one-eighth of the floor space. Three of these windows are skylights (limewashed), one of which is defective, and renders the adjacent wall damp.

There are glass cases against the side windows which reach 2ft. 8in. from each window-sill, and the height of each window is 5ft. 3in., so that one-half of each side window is cased off. The lower panes of the side windows are semi-transparent.

The direction of the light is from the right and slightly from above.

Room No. 4

Measures 27ft. 4in. \times 17ft. 8in., or 482 sq. ft., and the average number of children present during June, 1903, was 57.4, thus allowing 8.3 sq. ft. of floor space per head. The total cubic capacity is 8,209 cubic feet, or 143 cubic feet per head.

Ventilation. The ventilation consists of three window hoppers 1ft. 6in. \times 9in., and one opening without side shields 1ft. 10in. \times 1ft. 3in.; one Sherringham valve, 12ft. from floor, 6in. \times 5in., and one outlet in ceiling, 2ft. \times 6in.

The permanent outlet ventilation consists of one Sherringham valve, 6in. \times 5in., close to ceiling, and one outlet in the ceiling, 2ft. \times 6in. The total area of permanent outlet ventilation is 174 sq. in., or 3 sq. in. per head.

There is no permanent inlet ventilation, and the ventilation is not cross.

Lighting. This room is lighted by three windows, 5ft. 3in. \times 4ft. 6in., or 71 sq. ft., which is equal to one-sixth of the floor space.

The light is received from the left and behind.

The glass is partly transparent and partly semi-transparent.

There are six naked gas jets.

Recommendations.

- I. To improve the ventilation openings where necessary.
- II. To arrange that Rooms 3 and 4 shall not contain more than 80 and 53 infants respectively.
- III. To provide easing troughs for the sanitary conveniences.
- IV. To repair the ceiling and skylight in No. 3 room.

ST. BARTHOLOMEW'S SCHOOL.

This school was erected in 1897, and is a one storey building of stone facings and brick.

There is a large cowl outlet ventilator fixed in the roof of the mixed department, and a grating in the gable end of the infants' department.

There are no appearances of dampness and the building is in good repair.

Playgrounds.

There are two playgrounds: one for boys, measuring 634 sq. yds., and one for girls and infants, measuring 726 sq. yds.

These playgrounds are separated by a brick wall (with a door), and are unflagged except for a distance of 4 yds. from the back doors of the school. No portion is covered.

Sanitary Conveniences.

The sanitary conveniences are upon the trough system, with a shaft 1ft. 6in. deep, and are situated 14 yds. from the school.

There are six compartments for the boys, and a urinal (16 linear feet); three compartments and a slate urinal for infant boys (6 linear feet), and four compartments for the girls. The conveniences are flushed automatically three times a day from two 30-gallon cisterns.

There is an open passage in front, 4ft. wide, the front wall being about 7ft. 6in. high.

Dry Refuse.

The dry refuse is stored in a brick ash-pit, and emptied from outside.

Walls.

The internal surfaces of the school walls are boarded to a height of 4ft. 6in. from the floor and painted light brown; above this height they are plastered and coloured pale green.

Lighting.

The window panes are of muranese glass. The artificial light is gas.

Floors.

The floors are boarded on concrete, except those in the cloak-rooms.

Heating.

The school is heated by means of hot water pipes carried along the walls.

Cloak-Rooms.

There are three cloak-rooms—one for infants, and one for girls situated on each side of the main entrance, Nos. 9 and 7 respectively. There is one for the boys at the town end of the school, No. 4.

Cloak-Room No. 9.

The infants' cloak-room measures, 33ft. 7in. × 9ft. 5in. It is lighted by two sash windows in front, each 3ft. 4in. × 2ft. 6in., and a small window behind 2ft. 6in. × 8in.

The floor is tiled, and the walls are boarded, 5ft. high, and coloured green above.

There are 143 pegs (numbered)

This room is divided from the passage by a partition 7ft. high.

There are four brown enamelled lavatory basins, discharging over an outside gully.

The heating is by means of hot water pipes, and there is a ventilator 1ft. 6in. × 7in. in the ceiling.

Cloak-Room No. 7.

The girls' cloak-room measures 33ft. 7in. × 8ft. 7in. The floor is concreted, and the walls are boarded to a height of 4ft. 6in. from the floor, and above are coloured pale green.

This room is lighted by two windows, and is ventilated by a Sherringham valve, 9in. × 6in. inlet, and an outlet 18in. × 12in. in the ceiling.

The heating is by means of hot water pipes.

There are three earthenware lavatory basins, the waste pipes being connected to one common iron pipe, and discharging over a gully outside.

There are 110 pegs arranged on the walls and on a rack.

There is also a gas cooking stove in this cloak-room for the use of the teachers.

Boys' Cloak-Room No. 4

Measures 33ft. 4in. × 8ft. 10in. The floor is concreted; the walls are boarded and coloured green.

There are 76 pegs fixed on the walls.

There are three earthenware lavatory basins.

This room is also ventilated and lighted in the same way as the girls' cloak-room.

One side of this cloak-room is occupied by a large cupboard for the school books.

Near this room is recess (No. 3), containing a brown glazed sink stone.

MIXED DEPARTMENT.

This department consists of one large schoolroom, and two classrooms, numbered 1, 5 and 6 on the plan.

Large Schoolroom No. 1.

The average number present in this room during September, 1903, was 94.

The total floor area measures 1,360 sq. ft., or an average of 14.4 sq. ft. per scholar. The total cubic capacity is 19,044 cubic feet, or 202.5 cubic feet per head.

Lighting. The total lighting area is 288 sq. feet, or about one-fourth of the floor space.

The light is received from the left, right and behind.

Ventilation. This room is ventilated by means of 12 window-sill ventilators, 6in. \times 3in., and two Sherringham valve inlets, 7 $\frac{1}{2}$ in. \times 4in., 4ft. 6in. from floor; two outlets over the gas in the ceiling, 12in. \times 12in.

Four windows will open, in which there are 12 Sherringham hoppers.

The total permanent inlet area measures 276 sq. in., or an average of 2.9 sq. in. per scholar.

The total permanent outlet area measures 288 sq. in., allowing 3.0 sq. in., per scholar, and consists of two openings in the ceiling.

There is no cross ventilation.

Room No. 5.

The average number present in this room during September, 1903, was 40.

The total area of the floor space measures 610 sq. ft., or an average of 15.2 sq. ft. per scholar. The total cubic capacity is 8,546 cubic feet, or 213.6 cubic feet per head.

Lighting. The total lighting area measures 80 sq. ft., or about one-seventh of the floor space.

The light is received from the left, and indirectly through the partitions behind and on right.

Ventilation. This room is ventilated by five window-sill inlet ventilators, two 7in. x 7in., and three 6in. x 3in., and an outlet ventilator in the ceiling 12in. x 12in.

Two windows will open, in which there are three Sherringham hoppers.

The total permanent inlet ventilation measures 152 sq. in., or an average of 3.8 sq. in. per scholar.

The permanent outlet ventilation measures 144 sq. in., allowing 3.6 sq. in. per scholar.

There is partial cross ventilation.

Room No. 6.

The average number present in this room during September, 1903, was 59.

The total floor space measures 604 sq. ft., or an average of 10.2 sq. ft. per scholar.

The total cubic capacity is 8,460 cubic feet, or 143.3 cubic feet per head.

Lighting. The total lighting area measures 80 sq. ft., and is about one-seventh of the floor space.

The light is received from the left.

Ventilation. This room is ventilated by means of five window-sill inlet ventilators, two 7in. x 7in., and three 6in. x 3in., 4ft. 6in. from floor, and chimney-breast outlet ventilator, 7in. x 7in., and an open fireplace, which is not used. There is also an opening, 12in. x 12in., near the ceiling, leading to the cavity between the ceiling and roof. There are three Sherringham hoppers, two 6ft. and one 14ft. from the floor, and also two hinge windows above.

The total permanent inlet ventilation measures 152 sq. in., allowing an average of 2.5 sq. in. per scholar.

The total permanent outlet ventilation measures 193 sq. in., or an average of 3.2 sq. in. per scholar.

There is partial cross ventilation.

INFANTS' DEPARTMENT.

This department consists of two rooms numbered 10 and 11 on the plan.

Room No. 10.

The average number present in this room during June, 1903, was 60.

The total floor space measures 530.8 sq. ft., or an average of 8.8 sq. feet per scholar. The total cubic capacity is 9,026 cubic feet, or 150.4 cubic feet per head.

Lighting. The total lighting area measures 93 sq. ft., and is about one-sixth of the floor space.

The light is received from the left.

Ventilation. This room is ventilated by means of eight window-sill inlet ventilators, measuring 6in. \times 5in.; an outlet ventilator in the ceiling, 18in. \times 18in., and one grating in outside wall, 13in. \times 12in. There are four Sherringham hoppers, 6ft. from the floor, and four hinge windows.

The total permanent inlet area measures 240 sq. in., or an average of 4 sq. in. per scholar.

The total permanent outlet area measures 480 sq. in., or an average of 8.0 sq. in. per scholar.

Room No. 11.

The average number present in this room during June, 1903, was 29.

The total floor space measures 526.75 sq. ft., allowing an average of 18.1 sq. ft. per scholar. The total cubic capacity is 8,954 cubic feet, or 308.7 cubic feet per head.

Lighting. The total lighting area measures 93 sq. ft., or about one-fifth of the floor space.

The light is from the left.

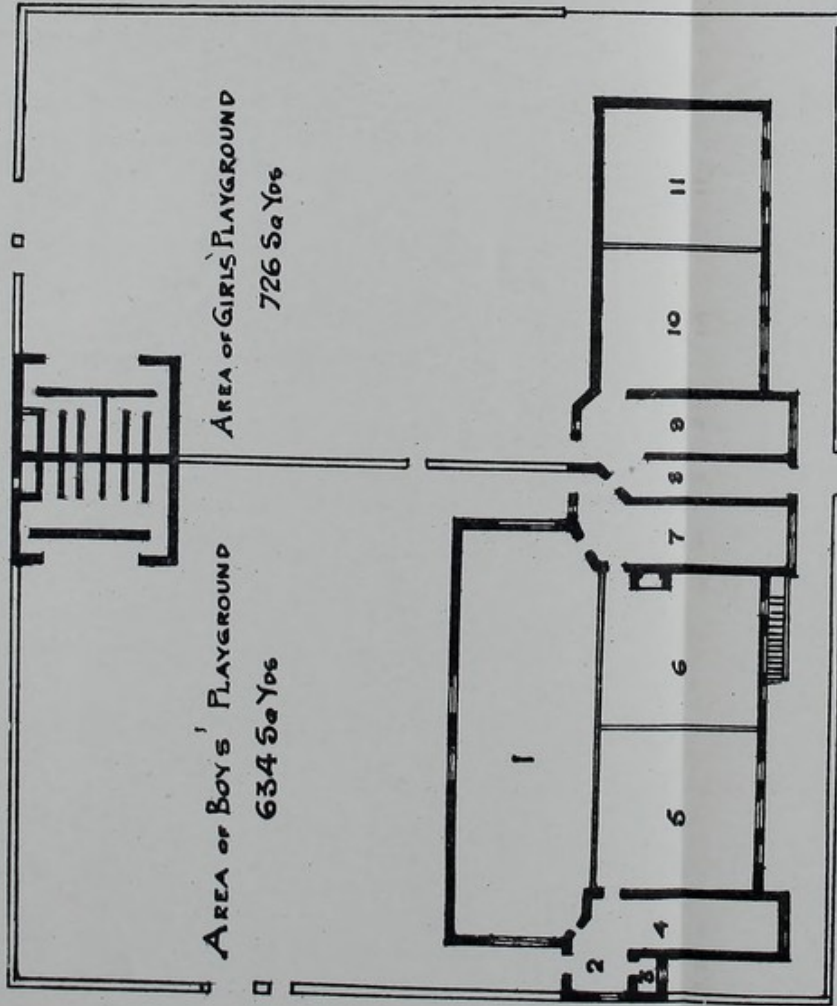
Ventilation. This room is ventilated by means of eight window-sill inlet ventilators, 6in. \times 5in.; one outlet ventilator in ceiling, 18in. \times 18in., and one grating in outside wall, 13in. \times 12in.

There are four Sherringham hoppers, 6ft. from floor.

The total permanent inlet ventilation area measures 240 sq. in., or an average of 8.3 sq. in. per scholar.

The total permanent outlet ventilation area measures 480 sq. in., or an average of 16.6 sq. in. per scholar.

NUTTALL ST.



Room marked	Average height, feet.	Cubic feet.
1.....	61' 10" x 22' 0" x 14' 0" =	19044
2.....	9' 0" x 6' 10"	
3.....	5' 10" x 2' 9"	
4.....	33' 4" x 8' 10"	
5.....	24' 10" x 24' 7" x 14' 0" =	8546
6.....	24' 7" x 24' 7" x 14' 0" =	8460
7...	33' 7" x 8' 7"	
8.....	33' 7" x 5' 10"	
9.....	33' 7" x 9' 5"	
10.....	21' 8" x 24' 6" x 17' 0" =	9026
11.....	21' 6" x 24' 6" x 17' 0" =	8954

CROFT ST.



TURNPIKE ROAD

— ST. BARTHOLOMEW'S SCHOOL —

- EWOOD -

Scale 30 feet to 1 inch



ST. JAMES' SCHOOL, Guide.

This school was erected in 1855, and is a one-storey building of stone, situated in School Lane, on a very open site.

Playgrounds.

There are two playgrounds: one for the boys, measuring 327 sq. yds., of which 170 sq. yds. are flagged; and one for the girls and infants, measuring 397 sq. yds., the whole surface of which is flagged and slopes to a surface gully. No portion is covered.

Sanitary Conveniences

The sanitary conveniences are of the syphon earthenware trough type, and are automatically flushed four times a day.

The sanitary conveniences are situated 14 yds. from the school, and there are three compartments, two for the boys and one for teachers, and a urinal, 9 linear feet, and seven compartments, four for girls, one for teachers, and two for infants. There is a flushing pipe on one side of the urinal.

The passage in front measures 2ft. 9in., and is open at the top, the wall facing the passage being 9ft. in height.

Dry Refuse.

The dry refuse is stored in ash-tubs in a building adjoining the boys' conveniences.

Walls.

The internal surfaces of the walls are boarded to a height of 4ft. from the floor, and coloured light brown, and the remainder of the walls are plastered and coloured green.

Floors.

The floors are boarded and are swept daily, and washed once a year. The desks are washed once a month.

Lighting.

The glass in the windows is chiefly semi-transparent. The artificial light is gas.

Heating.

The heating of the rooms is effected by means of hot water pipes, and radiators in the large room.

Cloak-Rooms.

There are three cloak-rooms: two for the infants, and one for the boys and girls.

These cloak-rooms are situated at each side of the main entrance, and on the plan are numbered 6 and 7 (infants), and 5 (boys and girls).

Cloak-Room No. 5.

This room is sometimes used as a class-room, and is 15ft. 6in. × 13ft 6in.

It is lighted by five windows, 6ft. 2in. × 2ft., and is ventilated by one Sherringham hopper in the window, with glass cover, and two Sherringham valves in the walls, 8in. × 4in. (broken), and one of which is blocked up with paper, and one outlet in the roof, 3ft. × 1ft.

There are 39 pegs arranged on the walls.

Infants' Cloak-Room.

The cloak-rooms for the infants measure 10ft. 6in. × 4ft. 6in., and each is lighted by two windows, one in passage from entrance and one in lavatory.

There are 64 pegs in these two cloak-rooms, placed against the walls.

There are two lavatories, one adjoining No. 6 room, and one adjoining No. 7 room, each containing two lavatory basins, the waste pipes of which discharge over gullies outside.

MIXED DEPARTMENT.

The mixed department consists of one large school room and a class-room, numbered 4 and 2. The class-room is only occasionally used, so the calculations in respect to the large room are for the whole number of scholars, and, for class-room No. 2 they have been based upon the number present at the time of inspection.

Mixed Schoolroom No. 4.

The average number present in this room during September, 1903, was 90.2.

The total floor space measures 1,798 sq. ft., or an average of 19.9 sq. ft. per scholar. The total cubic capacity is 41,370 cubic feet, or 458.6 cubic feet per head.

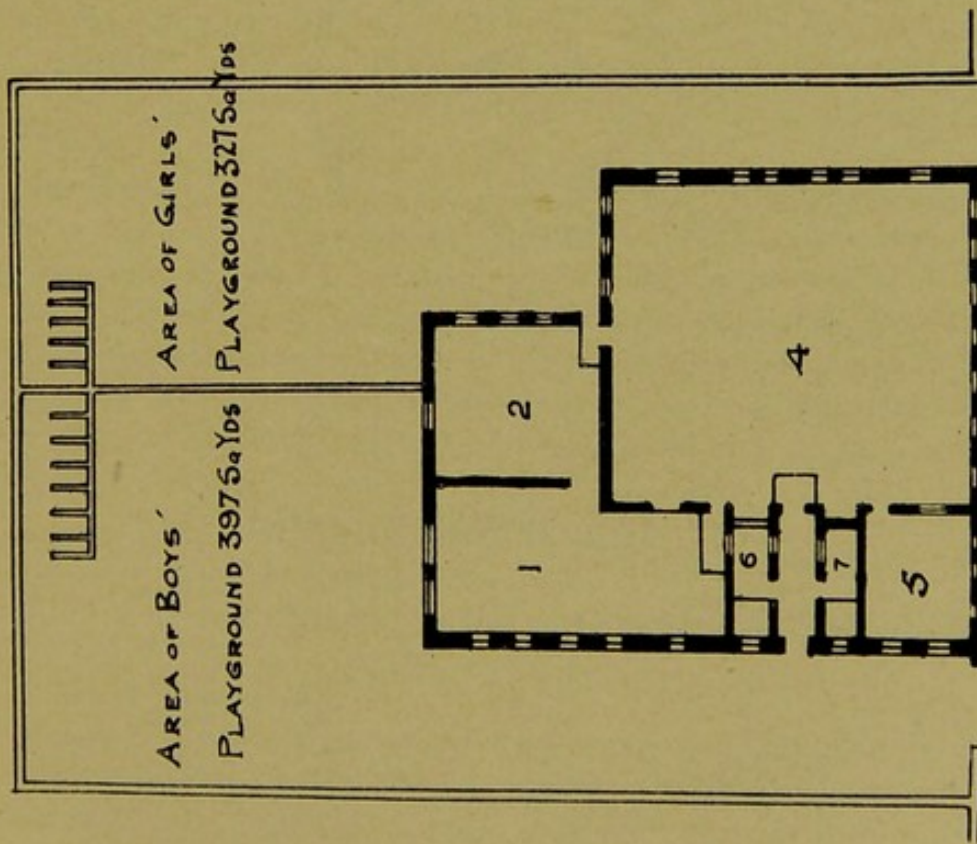
This room is used on Sundays.

Lighting. The total lighting area measures 243.6 sq. ft., or about one-seventh of the floor space.

The light is received from behind, right, and left.

There is a sash window in a partition wall between this room and No. 5 class-room.

ST JAMES' SCHOOL, GUIDE



Room marked	Average height.	Cubic feet.
1	$19' 0'' \times 19' 0'' \times 13' 9''$	= 8483
2	$16' 0'' \times 16' 0'' \times 13' 9''$	= 4670
4	$19' 0'' \times 19' 8'' \times 12' 6''$	= 41370
5	$44' 5'' \times 40' 6'' \times 23' 0''$	= 2877
	$15' 6'' \times 13' 6'' \times 13' 9''$	=



Scale 30 feet to 1 inch



There are six windows, which will open, four hinge windows, and two large swivel windows.

Ventilation.

The total permanent inlet ventilation consists of seven Sherringham valves, 8in. x 4in., and measures 224 sq. in., or an average of 2.4 sq. in. per scholar. Four of these Sherringham valves are covered with wire gauze, and painted over.

The total permanent outlet ventilation measures approximately 2,592 sq. in., or an average of 28.7 sq. in. per scholar, and consists of six outlets, 3ft. x 1ft., in the roof leading to openings in the gable-ends.

There is cross ventilation.

Room No. 2.

The average number present in this room during September, 1903, was 28.

The total floor space measures 373 sq. ft., or an average of 13.3 sq. ft. per scholar. The total cubic capacity is 4,670 cubic feet, or 166.8 cubic feet per head.

Lighting. The total lighting area measures 66 sq. ft., or one-fifth of the floor space.

The light is from behind and the left.

Ventilation. There are two hinge windows. The permanent inlet ventilation consists of two Sherringham valves, 8in. x 4in., giving an area of 64 sq. in., or an average of 2.3 sq. in. per scholar.

The outlet ventilation consists of two outlets in the ceiling, 24in. x 12in., two open fireplaces, one of which is blocked up, and two gratings in the chimney-breasts, one 9in. x 4in., and one 9in. x 6in., giving a total area of 666 sq. in., or an average of 23.8 sq. in. per scholar.

INFANTS' DEPARTMENT.

The infant school consists of one room, No. 1.

The average number present in this room during July, 1903, was 43.4.

This is a gallery room.

The total floor space measures 617 sq. ft., or an average of 14.2 sq. ft. per scholar. The total cubic capacity is 8,483 cubic feet, or 195.4 cubic feet per head.

Lighting. The total lighting area measures 120 sq. ft., or about one-fifth of the floor space.

The light is from behind, and the left, and slightly from the front through the glazed door and window which separate this room from the large room.

Ventilation. There are two Sherringham hopper windows opening 2ft. x 8in. (one of which has a wooden cover and one a glass cover), 6ft. 3in., from the floor, and a five opening on hinges. There are two Sherringham valves, 8in. x 4in., at 6ft. 6in. from the floor, with covers.

The permanent inlet ventilation consists of two Sherringham valves, or 64 sq. in., thus allowing 1.4 sq. in. per head.

There are no permanent outlet ventilation openings.

Recommendations.

- I. To improve the ventilation openings where necessary.
- II. To discontinue the use of the cloak-room as a class-room.

ST. JAMES' SCHOOL, Blackamoor.

This school was erected in 1873, and is a one-storey building of stone. There is a Boyle's ventilator on the roof.

Playground.

There is one playground having an area of 1,574 sq. yards, which is unflagged. No portion is covered. There is a water-tap in the playground.

Sanitary Conveniences.

The sanitary conveniences consist of the pail and earthenware trough system. There are two pail conveniences, and a urinal (1ft. 9in. linear) for the boys, fixed against one gable-end of the school. In front of these conveniences there is an open passage, 3ft. wide, the wall being 7ft. high.

There are five compartments for the girls, on Merrill's earthenware trough system, and are flushed automatically four times a day. There is a passage in front 3ft. wide.

Dry Refuse.

The dry refuse is stored in a corner of the playground near the girls' conveniences.

Walls.

The internal surfaces of the walls are plastered. They are boarded to a height of 4ft. from the floor, and above this, they are of a green colour.

Floors.

The floors are boarded. They are swept daily and washed three times a year.

Heating.

The heating is carried out by hot water pipes.

Lighting.

The artificial lighting is gas, and the windows are of clear glass, except the lower panes. At the back of the school the external surfaces of windows are covered with wire to prevent breakages from football, etc.

MIXED SCHOOL.

This department consists of one large room and a class-room. The class-room is used occasionally, and the following particulars of the large room refer to the whole number in the large school for the month of September, 1903, during the time when the class-room was unoccupied, and the particulars of the class-room are based upon the number of children present at the time of inspection.

Room No. 1.

The average number present in this room during September, 1903, was 64.5.

The total floor space measures 2,400 sq. ft., or an average of 37.2 sq. ft. per scholar. The total cubic capacity is 55,200 cubic feet, or 855.8 cubic feet per head.

Lighting. The total lighting area measures 275 sq. ft., or about one-eighth of the floor space.

The light is from behind and the front.

Ventilation There are ten windows opening on hinges, two panes opening similarly in a domer window, and two fireplaces.

The total permanent inlet ventilation measures 96 sq. in., or an average of 1.4 sq. in. per scholar, and consist of four Sherringham valves, 8in. x 3in., at a height of 6ft. 9in. from the floor.

The total permanent outlet ventilation consists of one outlet in ceiling, 2½ft. x 2½ft., and two outlets in chimney-breast 12in. x 12in., or 1,188 sq. in., thus allowing 18.4 sq. in. per head.

Room No. 3.

Part of this room is used as a cloak-room, the floor area of this portion being 60 sq. ft.

There are 141 pegs, fixed in a passage leading from this room to the playground, and separated from the class-room, by a wooden partition about 6ft. 6in. in height.

The number present in this room was 24.

The floor space measures 360 sq. ft., or an average of 15 sq. ft. per scholar. The total cubic capacity is 5,400 cubic feet, or 225 cubic feet per head.

Lighting. The total lighting area measures 72 sq. ft., or about one-fifth the floor space.

The light is from the left and behind.

Ventilation. There are two windows with Sherringham hoppers, each opening 12in. \times 9in.

There is no permanent inlet ventilation.

The permanent outlet ventilation consists of a grating in the chimney-breast, 6in. \times 6in., giving an area of 36 sq. in., or an average of 1.5 sq. in. per scholar. There is an open fire-place which is not used.

There is a white enamelled lavatory basin in this room, the waste pipe of which discharges over a gully outside.

Room No. 2.—Infants.

The average number present in this room during July, 1903, was 43.5.

The total floor space measures 360 sq. ft., or an average of 8.2 sq. ft. per scholar. The total cubic capacity is 5,400 cubic feet, or 124.1 cubic feet per head.

Lighting. The total lighting area measures 72 sq. ft., or about one-fifth of the floor space.

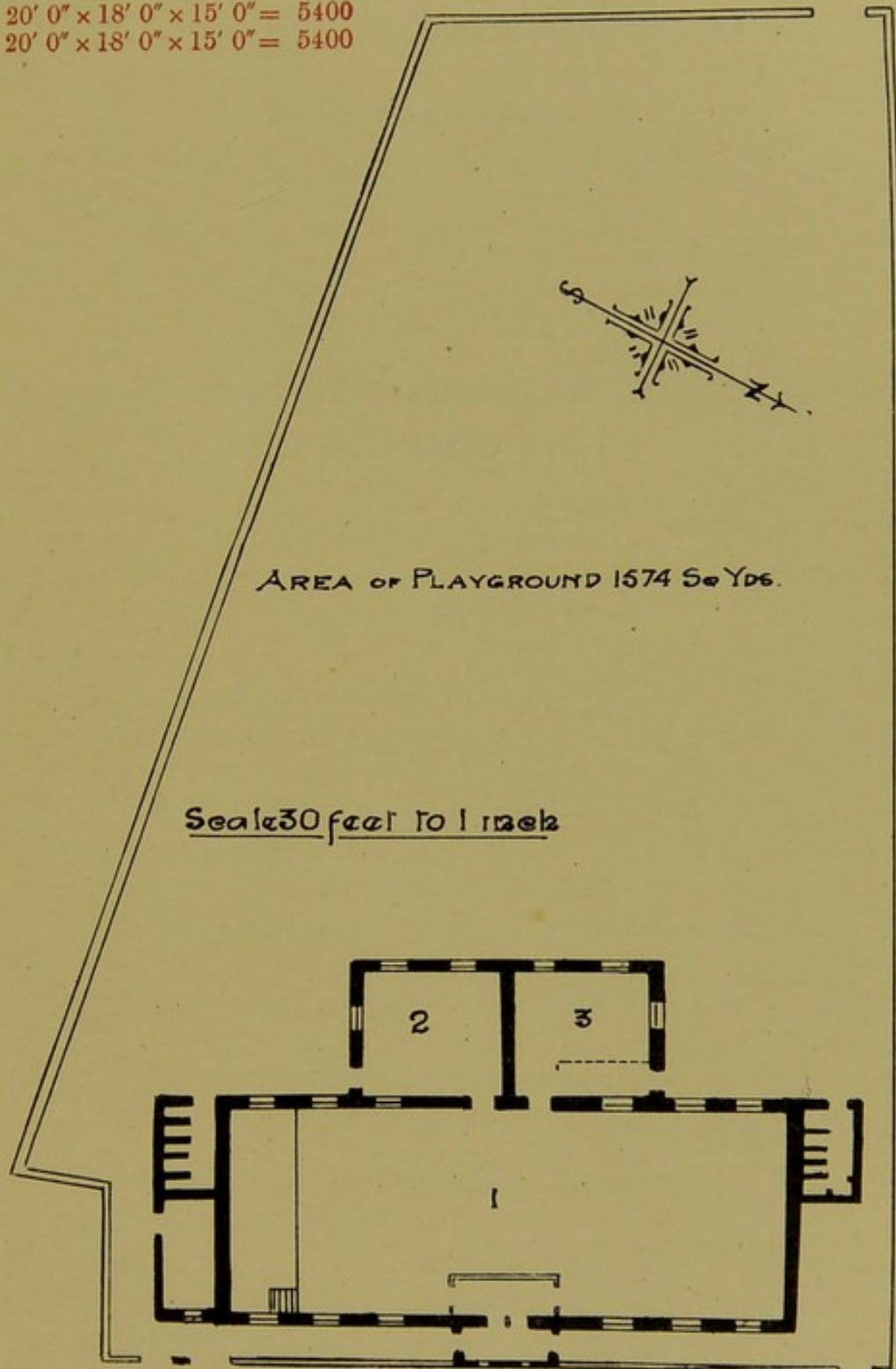
The light is from behind and the left.

Ventilation. There are two window hoppers in this room.

The total permanent inlet ventilation, consists of two Sherringham valves, 6in. \times 6in., giving an area of 72 sq. in. or an average of 1.6 sq. in. per head.

The total permanent outlet ventilation measures 54 sq. in., or an average of 1.2 sq. in. per scholar, and consists of a grating in the chimney-breast, 9in. \times 6in.

Room marked.	Average height	Cubic feet.
1	80' 0" x 30' 0" x 23' 0"	= 55200
2	20' 0" x 18' 0" x 15' 0"	= 5400
3	20' 0" x 18' 0" x 15' 0"	= 5400



Scale 30 feet to 1 inch

CHURCH GROUNDS

ROMAN ROAD.

— ST. JAMES' SCHOOL —
— BLACKAMOR —



There is no cross ventilation. The fireplace in this room is not used.

Recommendations.

- I. To convert the pails to the fresh-water system.
- II. To improve the cloak-room accommodation.
- III. To improve the ventilation where necessary.

LOWER DARWEN CONGREGATIONAL SCHOOL.

This school was erected in 1896, and is a one-storey building of stone. The structure is in very good condition.

There are two revolving outlet ventilating cowls in the roof of the large room, and one in the roof of the infants' room.

Playgrounds.

There is one playground, measuring 1,135.5 sq. yds., which is flagged around the school for a width of 7 yds., except at the back entrance.

The remaining portion of the playground is unflagged, and is covered with mill ashes.

Sanitary Conveniences.

The sanitary conveniences are of the earthenware trough type; they are 14yds. from the school, and the shaft in each compartment is 3ft. deep.

There are four compartments for the boys, and a urinal of 6 linear feet.

There are six compartments for the girls and infants.

The sanitary conveniences are flushed once a day, by a 30-gallon cistern.

There is a passage in front of the conveniences 2ft. 6in. wide, open at the top, and the face wall is 6ft. high.

Dry Refuse.

The dry refuse is stored in a tub placed under a flagged cover near the boys' conveniences.

Walls.

The internal walls are plastered and coloured pale blue. They are boarded to a height of 4ft. from the floor.

Floors.

The floors are boarded, and are swept every night and washed twice a month. It is worthy of note that this is a more frequent cleansing than is carried out at any other school in the town.

Heating.

The heating of the rooms is carried out by hot water pipes carried along the walls.

Lighting.

The glass in the windows is plain except the lower panes.

Cloak-Rooms.

There are two cloak-rooms, one for boys, and one for girls and infants.

Cloak-Room No. 8

For the boys, is situated at the back entrance of the school, and measures 14ft. 5in. \times 12ft. 2in. It is lighted by a window, 6ft. \times 4ft. 6in. The floor is boarded. The room is heated by hot water pipes, and ventilated by an inlet opening 12in. \times 6in. There are 177 pegs. This room also contains a white enamelled lavatory basin the waste pipe of which discharges over an outside gully.

Cloak-Room No. 3

For girls and infants, is situated at the entrance of the large school and infants' school. It measures 15ft. 3in. \times 15ft. 0in., and is lighted by two windows, each, 5ft. 0in. \times 4ft. 6in. It is ventilated by one Sherringham valve, 12in. \times 6in. There are 96 pegs, and a lavatory basin, as in classroom No. 8.

The school consists of one large room and two class-rooms; one of the latter being used by the infants.

Large Room No. 4.

The average number present during September, 1903, was 75.

The total floor space measures 1,409 sq. ft., or an average of 18.8 sq. ft. per scholar. The total cubic capacity is 23,958 cubic feet, or 319.4 cubic feet per head.

Lighting. The total lighting area measures 341 sq. ft., or one-fourth of the floor space.

The light is from the left, right, behind, and partly from the front.

Ventilation. The ventilation consists of six windows, opening on hinges at the top; six Sherringham valves, 12in. \times 6in., 6ft. 10in.

from the floor; and two outlet ventilator openings in the roof, 24in. x 24in., over the gas pendant. One window also opens on hinges into the vestibule.

The total permanent inlet ventilation area measures 432 sq. in., or an average of 5.7 sq. in. per scholar.

The total permanent outlet ventilation area measures 1,152 sq. in., or an average of 15.3 sq. in. per scholar.

There is cross ventilation.

Room No. 5.

The average number present during September, 1903, was 25.

The total floor space measures 282 sq. ft., or an average of 11.2 sq. ft. per scholar. The total cubic capacity is 3,954 cubic feet, or 158.1 cubic feet per head.

Lighting. The total lighting area measures 83 sq. ft., or between one-third and one-fourth of the floor space.

The light is received from the right and behind.

Ventilation. The ventilation consists of two windows opening on hinges, and two Sherringham valves, 12in. x 6in., 6ft. from the floor. There is also an open fireplace.

There is partial cross ventilation.

The total permanent inlet ventilation area measures 144 sq. in., or an average of 5.7 sq. in. per scholar.

There is no permanent outlet ventilation, except the open fireplace.

Infants' Classroom.

The average number present in this room during July, 1903, was 62.

Part of this room is in the form of a gallery, and in the floor there is a trap door leading to an opening in which boards are stored.

The total floor space measures 620 sq. ft., or an average of 10 sq. ft. per scholar. The total cubic capacity is 10,542 cubic feet, or 170 cubic feet per head.

Lighting. The total lighting area measures 177 sq. ft., or between one-third and one-fourth of floor space.

The light is received from the left, right, and from behind.

The artificial light is incandescent.

Ventilation. This room is ventilated by four windows opening on hinges, three Sherringham valves, 12in. x 6in., 6ft. from the floor,

and one outlet in the ceiling, 12in. x 12in. There is a fireplace without guard.

The total permanent inlet ventilation area measures 216 sq. in., or an average of 3.4 sq. in. per scholar.

The total permanent outlet ventilation area measures 144 sq. in., or an average of 2.3 sq. in. per scholar.

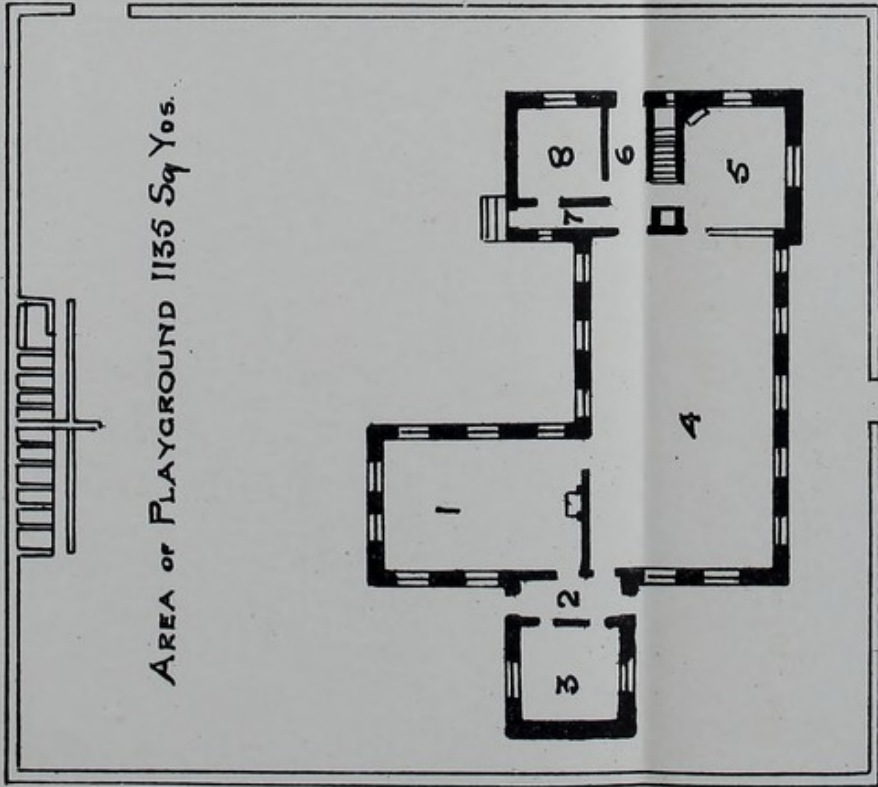
There is cross ventilation.

Recommendation.

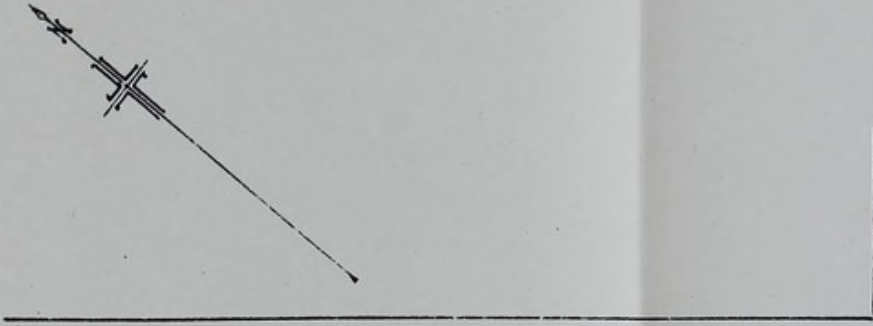
- I. To provide a guard for the fireplace in the infants' class-room.

— LOWER DARYWEN —

— CONGREGATIONAL SCHOOL —



Scale 30 feet to 1 inch.



Room marked	Average height, feet.	Cubic feet.
1	30' x 20' 4" x 17' 0"	10542
2	15' 0" x 5' 6"	
3	15' 3" x 15' 0"	
4	50' 4" x 28' 0" x 17' 0"	23958
5	18' 10" x 15' 0" x 14' 0"	3954
6	18' 3" x 6' 3"	
7	13' 0" x 3' 4"	
8	14' 5" x 12' 2" x 11' 6"	



**A Chemical Analysis of the Air of
Blackburn Schools for Carbon
Dioxide Gas.**

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

CHICAGO, ILL.

CHAPTER III.

Pure air consists of about 21 parts per cent. (by volume) of Oxygen, and about 79 per cent. of Nitrogen, together with traces of Carbon Dioxide and Ammonia, with a variable quantity of watery vapour. The solid matter which is suspended in air consists of organic and mineral particles and microbes.

The Carbon Dioxide, or Carbonic Acid Gas (CO_2) in air is generally taken as the indication of the amount of impurity in the air, and these two bear a fairly constant relation to one another. The amount of Carbon Dioxide varies from 3 parts of the gas per 10,000 parts of air in pure mountain air, to 10, 20, 30, and even 40 parts per 10,000 in crowded and badly ventilated rooms. In ordinary town air the Carbon Dioxide varies from 4 to 5 parts per 10,000, since there are certain sources of impurity which are unavoidable, such as products of respiration and combustion.

De Chaumont has fixed this additional unavoidable impurity at 2 parts per 10,000. This must be added to the 3 parts which are always present. Therefore any amount of Carbon Dioxide exceeding 5 parts per 10,000 must be considered to be an impurity.

Angus Smith's analyses were as follows:—

	Volumes of CO_2 in 10,000 Volumes of Air.
On mountains and moors in Scotland (mean of 75 analyses)	3.36
In Glasgow streets (mean of 42 analyses)	5.02
London, E.C. (mean of 12 analyses)	4.74
Manchester streets, ordinary weather	4.03
During fogs in Manchester	6.79

Dr. Russell's analyses show that the average for London air near St. Bartholomew's Hospital, was 4 parts per 10,000, and during foggy weather, 7 per 10,000.

In Finsbury Street air Mr. Colwell found CO_2 to be present to the extent of 4.3 per 10,000 (mean of six analyses).

Mr. Edward Davies, of Liverpool, analysed 56 samples of outside air in Blackburn during March, 1899, and these averaged 5.24 volumes of CO_2 per 10,000, ranging from 7.48 to 3.8.

Mr. A. R. Davis also confirmed that Government experts have obtained results showing that the CO_2 in outside air varied from 4 to 7 volumes per 10,000.

Dr. Wheatley, my predecessor in office, in his analyses of outside air in Blackburn obtained no results above 5 volumes.

During December, 1903, and January, 1904, I have analysed 44 samples of outside air in various parts of Blackburn. The average amount of CO_2 present was 4.37 per 10,000, and the range was from 3.1 to 6.6 parts per 10,000. These 44 analyses included several samples of air taken on foggy days, when the results were 6.1, 6.2, 6.3, 6.5, and 6.6 parts of CO_2 per 10,000. Excluding foggy days the average of my analyses of outside air was 4.02 per 10,000. The highest result I obtained at any time in outside air was 6.6 per 10,000.

The average of six samples of outside air collected in various parts of Blackburn during the latter half of March, 1904, and analysed by Dr. Pickard, gave 3.6 parts of CO_2 per 10,000.

As the proportion of CO_2 in the outside air varies on different days, it is necessary to analyse the outside air each day when samples of inside air are examined. This has been done in these experiments.

On foggy days a greater proportion of CO_2 occurs in the air of rooms than on clear days. Also the proportion of CO_2 is greater in a room where gas jets are burning. One gas jet burning 4 cubic feet per hour consumes the Oxygen from 21.32 cubic feet of air.

CO_2 is increased by respiration, combustion, putrefaction, and fog, but diminished by vegetation, rain, high winds, and ventilation.

Nature assists in preventing the Carbon Dioxide in the air from accumulating to too great an extent in the following way: Green plants contain a body called Chlorophyll which under the action of the sun's rays has the property of breaking up the Carbon Dioxide gas into its two constituent parts, namely, Carbon and Oxygen. The plant needs the Carbon for its own life, and the Oxygen is returned to the atmosphere.

There is no definite connection between the amount of Carbon Dioxide, and the number of microbes in the air. As a rule a high percentage of Carbon Dioxide is associated with a high percentage of organic matter.

Method of Analysis of Air for Carbon Dioxide.

The greatest care was taken throughout these experiments to render them accurate in every detail.

The method for estimating the amount of Carbon Dioxide in the air of schools which I have employed is known as PETTENKOFER'S METHOD.

It may be of some interest if I give a brief description of the procedure adopted.

The solutions and apparatus used were:

- I. A saturated solution of baryta water prepared by placing 60 grams of Barium Hydrate in one litre of freshly boiled distilled water. This is shaken several times for two or three days. The precipitate then is allowed to settle, and the clear baryta is taken out as required.
- II. A standard solution made from pure Oxalic Acid which has been re-crystallised. This is made by carefully weighing out on the delicate balance 2.819 grammes of the Oxalic Acid, and dissolving the same in 1 litre, or 1,000 cubic centimetres (c.c.) of distilled water.

Each cubic centimetre (c.c.) of this resulting solution is equal to half a cubic centimetre of Carbon Dioxide.

[During my experiments I made up this solution on alternate days, so as to use it fresh. The solution was never used the same day as it was made, so as to ensure the solid being thoroughly dissolved.]

- III. Solution of phenol-phthalein.
- IV. One 100 c.c. and one 50 c.c. pipette.
- V. One 50 c.c. burette.
- VI. A small bottle of 200 c.c. capacity.
- VII. Sample bottles. Some of these were Winchester quarts, and some had about 5,000 or 6,000 c.c. capacity.
- VIII. A pair of bellows having a long piece of india-rubber tubing fitted to the nozzle.

A sample of air was collected in the bottle by pumping with the bellows for several minutes. The bottle was tightly corked and brought to the Health Office. In the case of the larger sample bottles 100 c.c.'s of baryta-water were placed in the bottle, and shaken for nearly one hour. Care was also taken not to breathe into the bottles during any part of the experiment. The baryta water in the sample bottle has the property of absorbing the Carbon Dioxide which is present in the air of that bottle.

At the end of an hour 50 c.c.'s of this baryta water are drawn off and placed in the small bottle. One or two drops of phenol-phthalein are added which turn this alkali into a rose-pink colour.

A sufficient quantity of the prepared Oxalic Acid solution is now added drop by drop from the burette until the pink colour exactly disappears. One must be careful not to add too much or too little.

The amount of oxalic acid solution required to reach this point is now read off.

In a similar way 50 c.c.'s of baryta water which have *not* been in contact with a sample of air are tested with the Oxalic Acid solution.

The amount of Oxalic used is again read off. The difference between these two readings will represent the amount of barium hydrate which has been converted into the barium carbonate through the absorption of Carbon Dioxide.

An example will make this clear.

The bottle had a capacity of 6,900 c.c.

100 c.c. of baryta water were placed in this jar, thus reducing the volume of air in that bottle to 6,800 c.c.

It was found that 50 c.c. of original baryta water needed 33.40 c.c. of standard Oxalic solution for neutralisation.

And 50 c.c. of the used baryta water from the sample bottle similarly needed 22.35 c.c. of Oxalic.

Thus:

50 c.c. of unused baryta required	33.45	c.c. Oxalic solution.
50 c.c. „ used „ „	22.35	c.c. „ „

Therefore the difference = 11.10

And we know that each c.c. of the Oxalic Acid solution is equivalent to 0.5 c.c. of CO_2 at 0 degrees c., and 760 m.m. of Mercury.

Therefore the CO_2 taken up by the 50 c.c. of baryta = 5.55 c.c.

Hence the 100 c.c. added to the sample bottle; the CO_2 absorbed = 11.10 c.c.

And if 11.10 c.c. of CO_2 were present in 6,800 c.c. of air, how many c.c. of CO_2 would be present in 10,000 c.c. of air?

Therefore, 16.32 c.c. of CO_2 were present in 10,000 c.c. of the air of that room.

It is also necessary to correct results for temperature and pressure.

In the case of the smaller sample bottles (2,000 c.c.'s to 3,000 c.c.'s), 25 c.c.'s of baryta are put in, and the bottle shaken or rolled. At the end of one hour or later, the neck of the bottle is washed with distilled water, the phenol phtalein dropped in, and the titration carried out directly into the bottle itself. This obviates the necessity of drawing any fluid from the sample bottle by mouth, and the method gave about .2 parts per 10,000 less of CO_2 than the method in which the larger bottles were used.

It will be seen that in these experiments a large number of varying conditions may affect the results. For example, the state of the

outside air and kind of weather, the number of children present, the condition of the window and other ventilation openings, the part of the room from which the sample was obtained, the time of day, the length of time since or to the playtime, the number of gas jets burning, etc., etc., may all affect the amount of CO_2 present. This is the reason why a description has been given of the conditions existing at the time when each sample was taken.

I have examined 107 samples of school-air for the amount of CO_2 , and these were collected in Blackburn schools during December, 1903, and January, 1904, when fogs occur, and when gas is often burning in the rooms. This number represents two samples from each school. Gas jets were burning in 18 schools when the samples were collected, and several days were very foggy.

During the latter end of March, 1904, Dr. Pickard kindly examined, at my request, 52 samples of school air for CO_2 . This number represents one sample from each school. His results are somewhat lower than mine, but this may be due, partly, to the fact that better weather prevailed when the second set of samples was taken, and partly to the fact that the taking of samples of air in the schools during the previous December and January had a marked effect in impressing upon many teachers the great importance of using the means of ventilation which are available. Also, no gas jets were burning when the 52 samples were collected in March.

The average of my 107 samples showed the presence of 10.41 parts per 10,000, ranging from 4.04 to 20.8 parts. The average of Dr. Pickard's 52 samples showed the presence of 8.2 parts of CO_2 per 10,000 parts of air, ranging from 4.2 to 15.2 parts.

In the 107 samples which I examined 52, or 48.5 per cent., contained less than 10 parts of CO_2 ; 44 samples, or 41 per cent., contained between 10 and 15 parts of CO_2 , and 11 samples, or 10.2 per cent., contained between 15 and 25 parts of CO_2 per 10,000 parts of air respectively.

The highest result I obtained at any time in school air was 20.8 parts of CO_2 per 10,000.

Similarly, on examining the results obtained in the 52 samples analysed by Dr. Pickard, I find that 43 samples, or 82.6 per cent., contained less than 10 parts of CO_2 in 10,000, and 8, or 15.3 per cent., contained from 10 to 15 parts of CO_2 . Only one sample contained more than 15 parts, viz., 15.2, and this was the highest result obtained in school air by Dr. Pickard.

The average of the 159 samples (representing three analyses from each school) showed the presence of 9.69 parts of CO_2 per 10,000 volumes.

Regarding the influence of open windows and open ventilators on the amount of CO_2 present in the air of schools, the following facts are of interest.

I.—In School No. 20, when none of these were open the amount of CO_2 was 20.8 (9 gas jets and a stove were burning also), but when the windows were open (and no gas burning) the amount was 7.9 parts per 10,000.

II.—In School No. 25 when one-half of the ventilation openings were open the amount of CO_2 was 10.9, and when two-thirds of these openings were open the amount was 7.9 per 10,000.

III.—In School No. 4 when none of the windows or ventilators were open, the amount of CO_2 was 10.9, but when one window was open the amount was 6.4 per 10,000.

Other instances will be seen on examining the Tables of Analyses appended.

It is interesting to compare the above results in analyses of school air with those obtained by other observers.

In 1897, Dr. Wheatley, my predecessor made a number of observations on the air of Blackburn schools. The following is an analysis of the results which he obtained:—

Parts of CO_2 per 10,000.	Under 8	8 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40
Number of samples	5	11	32	26	8	5	0	1

Thus, out of the 88 samples of air examined 18.1 per cent. contained less than 10 parts of CO_2 ; 12.5 per cent. contained between 8 and 10 parts; 36.3 per cent. between 10 and 15 parts; 29.5 per cent. between 15 and 20 parts; 14.7 per cent. between 20 and 30 parts of CO_2 per 10,000 respectively.

The above tests made by Dr. Wheatley showed on the average a little more than 15 parts of CO_2 per 10,000.

The following are the results obtained by Dr. Carnelley regarding the ventilation of Dundee schools.

	No. of Schools.	Average grant earned per head.	CO ₂ per 10,000 parts.	Condition of Air Micro-organisms per litre.
Mechanically Ventilated Schools	9	21s	*12	17
Naturally Ventilated Schools	95	18s. 3 $\frac{3}{4}$ d.	†21	97

* 5 Schools.

† 33 Schools.

Dr. Reid, in a former edition of his book, "Practical Sanitation," gives the following analyses of air in Public Elementary Schools, in Staffordshire:—

School	CO ₂ per 10,000.	School.	Co ² per 10,000.
Sleighford	14	Texall	22
Ellenball.....	15	Gt. Haywood (Catholic)	22
Salt.....	17	Ranten.....	24
Hyde Lea.....	18	Hixon.....	25
Gt. Haywood (National)	19	Colwick	28
Fradswell.....	20	Haughton.....	30
Weston.....	20	Reckerscote	32
Stowe	21	Bradwell.....	32
Gayton.....	22	Berkswich	37

Also the following table has been taken from the last edition of the same book.

SCHOOL.	Contents in cubic feet.	Average Attendance.	Cubic feet per head.	Ventilation.	Warming.	No. present when taken.	Outside Temperature Degrees.	Time when taken.	Impurity in volumes of Carbonic acid admissible per 10,000 air.	Amount over impurity.
1 SLEIGHFORD	11,528	50	231	{ Two openings through ceiling but not through roof.	Two fire places in side wall	37	33	12-0	14-83	8-83
2 ELLENHALL	8,160	40	204	{ Two ventilators, one at each end; both closed.	Stove in middle of room...	34	33	1-0	15-34	9-34
3 SALT	10,880	50	218	Nil	Two fire places in side wall	53	49	12-0	17-42	11-42
4 HYDE LEA	5,712	40	143	Nil (practically)	Fire place in wall.....	40	51	12-0	18-94	12-94
5 GREAT HAYWOOD (National)	10,368	34	305	Both ends and roof.....	Fire place at each end.....	30	37	12-0	19-87	13-87
6 FRADSWELL.....	6,095	40	152	Nil	Fire place in side wall.....	38	37	11-50	20-39	14-39
7 WESTON	13,230	45	294	Nil	Ditto	40	49	12-0	20-41	14-41
8 STOWE.....	5,776	63	93	{ Two ventilators, one at each end, both closed.	Ditto	33	37	12-0	21-06	15-06
9 GAYTON	5,970	43	139	{ Two ventilators one at each end.	Ditto	30	37	11-50	22-73	16-73
10 TEXALL	9,750	44	222	Nil.....	Ditto.....	24	35	12-0	22-73	16-73
11 GREAT HAYWOOD (Catholic)	7,344	38	198	Nil	Stove in room	37	33	12-0	22-98	16-98
12 RANTEN	11,036	26	424	{ Two small openings one at each end.	Two fire places in side wall	26	33	12-0	24-65	18-65
13 HIXON	12,096	36	336	{ Three ventilators in gable ends.	Open fire place.....	36	37	11-30	25-29	19-29
14 COLWICK (Infant) ...	6,912	40	173	Nil	Fire place in wall.....	26	49	11-30	28-41	22-41
15 HAUGHTON	6,446	50	128	Nil	{ Fire place in wall at end of room	40	42	12-0	3-30	24-30
16 RECKERSCOTE.....	7,718	53	145	{ Two ventilators through ceiling but not through roof. Not open.	Fire place in wall, also stove	35	39	11-45	32-01	26-01
17 BRADWELL	7,290	36	203	Nil.....	Fire place in wall.....	36	42	12-9	32-52	26-52
18 BERKSWICH	4,044	38	106	{ Two small ventilators in wall, only one open.	Fire place in wall, also stove	38	35	11-45	37-08	31-08

Dr. Wheatley also has given the following table of the amount of Carbonic Acid in the air, and of the size of the inlet and outlet ventilation openings in seven of the Public Elementary Schools of Blackburn.

No. of School.	Square inches of inlet and outlet per head.	CO ₂ per 10,000.
1	6.48	20
2	2.88	10
3	2.88	23
4	2.16	16
5	7.92	15
6	—	21
7	6.48	14

Dr. Scurfield made 164 estimations of the Carbonic Acid in the Sunderland schools, with the following results:—

	No. of observations.	Time school occupied.	CO ₂ per 10,000.
Board Schools.....	114	1 hour 36 min.	10.3
Denominational Schools	50	1 hour 36 min.	13.6

The recent investigations into the air of Blackburn schools may be tabulated shortly, as follows:—

Name of observer.	No. of analyses.	Average amount of CO ₂ per 10,000.
Dr. Pickard	52	8.2
Dr. Greenwood.....	107	10.41
Combined Total.....	159	9.69

Parts of CO ₂ per 10,000.	Under 10	10 to 15	15 to 20	20 to 25
No. of samples examined by Dr. Pickard	43	8	1	0
No. of samples examined by Dr. Greenwood	52	44	9	2

Therefore it will be seen :—

I.—That the air of Blackburn schools is better than it was seven years ago. This may be explained by the fact that in the intervening period much has been done in the way of improving ventilation openings, and that teachers generally now recognize the importance of this question more than they did several years ago.

I am sure that even better results than those recently obtained, would follow if more attention could be given to the means of natural ventilation available, especially if my recommendations contained at the end of the description of each school in Chapter II., regarding the provision of extra inlet and outlet ventilation openings, were carried out.

II.—That the recent analyses compare favourably with those obtained in the schools of other districts. The air of certain schools which I examined, however, ought to be better.

III.—That the amount of Carbon Dioxide gas per 10,000 volumes in the school air examined by Dr. Pickard and myself was less in average, than the average amount present in the air of five mechanically-ventilated schools in Dundee examined by Dr. Carnelley.

Also, samples of air taken from Accrington Road School, which is provided with mechanical ventilation, when the fans were not working, gave results below 8 parts per 10,000.

In the following Tables particulars are given of the conditions under which the samples of air were collected.

The two groups of analyses taken last December, January, and March respectively are followed by Tables showing the relation between the amount of Carbonic Acid in the air of schools to number of scholars present, cubic capacity, floor space, and size of inlet and outlet ventilation openings per head.



ANALYSES OF AIR IN BLACKBURN SCHOOLS BY THE MEDICAL OFFICER OF HEALTH.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
1	St. George's Girls' Higher Grade. 15	Large room, 2nd floor. 6	90	Mild day. Dec. 14, 1903. 9-45 to 10 a.m. Centre of room amongst scholars.		Clean.	Writing.	None since school assembled.	One half of windows open.	13.6	4.5
2	Do. 15	Small class room 1st floor 5	17	Dec. 14. 10-10 to 10-25. End of room behind scholars.		Clean.	Do.	Do.	One window open.	16.8	4.5
3	St. Alban's, Boys. 17	Large class room. 2	86	Dec. 14. 11-50 to 12-5. Centre of room amongst scholars.		Fairly clean.	Do.	11-15 to 11-30.	All windows and doors open.	7.5	4.5
4	Do. 17	Large school room. 1	223	Mild. Dec. 14. 12-8 to 12-25. Centre of room amongst scholars.		Do.	Reading.	Do.	All windows open and door from times scholars were sent out to play.	7.5	4.5
5	St. John's. 11	Large room, 2nd floor (boys). 4	263	Mild and little wind. Dec. 15. 11-5 to 11-20. Centre of room amongst scholars.	55°	Clean.	Do.	10-35 to 10-45.	Two-thirds of windows open, also doors.	7.8	3.4
6	Do. 11	Infants' large class room, ground floor. 4	85	Dec. 15. 10-21 to 10-36. Centre of room amongst scholars.	60°	Clean.	Writing.	None since school assembled.	One half of inlets in use.	9.2	3.4

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
7	St. Anne's, 26	Infants' large school room, ground floor. 5	None.	Dec. 15. 12-10 to 12-25. Centre of room.	51.5	Fairly clean.	Nil.	10-25 to 10-40. School dismissed at 12 a.m.	All windows and doors open.	4.4	3.4
8	Do. 26	Large school room, 1st floor (girls). 11	None.	Dec. 15. 12-30 to 12-45. Centre of room.		Do.	Do.	10-35 to 10-50. School dismissed at 12 a.m.	No windows open. One door open.	6.6	3.4
9	Holy Trinity. 18	Large room (boys). 2	80	Dec. 15. 2-10 to 2-25. Centre of room amongst scholars.	59	Do.	Writing.	None since school assembled.	All the windows open.	11.1	3.4
10	Do. 18	Infants' large school room. 11	158	Dec. 15. 2-40 to 2-55. Centre of room amongst scholars.		Very clean	Sewing & writing.	Do.	All the windows open.	7.6	3.4
11	Princes Street. 25	Infants' large school room, 1st floor. 6	86	Dec. 16. Mild, slight wind. 9-45 to 10-25. Centre of room amongst scholars.	58	Clean.	Writing.	Do.	One half ventilation openings open.	7.4	4.04
12	Do. 25	Large school room, ground floor. 6	129	Dec. 16. 9-45 to 10. Centre of room amongst scholars.	58	Do.	Reading & Arithmetic	Do.	Do.	10.9	4.04

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
13	St. Peter's National. 32	Large school room, 1st floor 4	130	Dec. 16. 11-40 to 11-55. Centre of room amongst scholars.	58	Very clean	Arithmetic	11 to 11-10	One third of ventilation openings open.	13.0	4.04
14	Do. 32	Infants' large school room, ground floor. 2	55	Dec. 16. 11-20 to 11-35. Centre of room amongst scholars.	52	Clean.	Painting.	10-45 to 11	None of the ventilators open.	8.4	4.04
15	Park Road. 38	Large room, 1st floor, boys and girls. 1	85	2-10 to 2-25. Dec. 16. Centre of room amongst scholars.	55	Very clean	Arithmetic	None since school assembled.	None of the ventilators open.	8.5	4.04
16	Do. 38	Infants' large school room. 2	111	Dec. 16. 2-40 to 2-55. Centre of room amongst scholars.	54	Clean.	Writing.	Do.	All the windows open.	7.03	4.04
17	Whalley Range. 5	Large school room, 1st floor 3	89	Dec. 17. Dull and damp. 9-35 to 9-50. Centre of room behind scholars.	57 54 gas jets burning.	Do.	Reading.	Do.	One half windows open.	10.6	4.04
18	Do. 5	Small class room, 1st floor, boys. 2	36	Dec. 17. 9-55 to 10-10. Centre of room behind scholars.	Six gas jets burning.	Do.	Reading.	Do.	One window and door open.	9.2	4.04

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										Inside room	Outside air.
19	St. Michael's. 7	Infants', main room. 1	66	Dec. 17. 9-30 to 9-45. Centre of room amongst scholars.	61 Three gas jets burning.	Fairly clean.	Scripture.	None since school assembled.	None of the ventilators open.	13.2	4.04
20	Do. 7	Large room (boys & girls). 5	97	Dec. 17. 10 to 10-15. Centre of room amongst scholars.	63 27 gas jets burning.	Do.	Writing & arithmetic	Do.	Two windows and six inlet ventilators open.	13.5	4.04
21	St. Mary's R.C. 36	Class room, 1st floor (girls). 3	42	Dec. 17. 11-40 to 11-45. Centre of room amongst scholars.	Six gas jets burning.	Clean.	Writing.	11 to 11-10	Two windows open, also open fireplace.	15.9	4.04
22	Do. 36	Large school room (boys). 1	92	Dec. 17. 11-15 to 11-30. Centre of room in front of scholars.	64 12 gas jets burning.	Do.	Reading & writing.	10-40 to 11-50.	None of the ventilators open.	13.8	4.04
23	St. Patrick's. 20	Infants' school room.	41	Dec. 17. 11-5 to 11-20. Centre of room amongst scholars.	58.5. Nine gas jets burning; also stove burning in centre of room.	Do.	Writing.	10-50 to 11-5.	None of the ventilators open.	20.8	4.04
24	St. Stephen's. 6	Class room, off main school room. 3	51	Dec. 17. 2-3 to 2-18. Centre of room amongst scholars.	56	Moderate.	Arithmetic	None since school assembled.	Two flush openings in windows open.	15.8	4.04

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
25	St. Stephen's. 6	Infants' large school room. 5	92	Dec. 17. 2-25 to 2-40. Centre of room amongst scholars.	56	Fairly clean.	Kinder- garten and sewing.	None since school as- sembled.	Six inlets in win- dows open and 10 inlet ventilators.	8.6	4.04
26	All Saints'. 41	Infants' class room. 6	74	Dec. 17. 2-45 to 3. Centre of school.	59	Clean.	Writing & sewing.	2-50 to 3-5	Two thirds of windows open.	7.3	4.04
27	Do. 41	Large class room (boys and girls). 4	42	Dec. 17. 2-25 to 2-40. Centre of room near the scholars.	60	Do.	Writing.	None since school as- sembled.	Two windows and one door open.	10.9	4.04
28	St. Gabriel's. 1	Large school room. 5	78	Dull. Dec. 18. 9-55 to 10-5. Centre of room amongst scholars.		Fairly clean.	Reading & arithmetic.	Do.	Ten windows and three inlet venti- lators open.	8.2	3.9
29	Do. 1	First class room on left of large school room. 3	43	Dec. 18. 9-25 to 9-40. Centre of room amongst scholars.		Do.	Scripture.	Do.	Two flush openings in windows and one inlet venti- lator open.	12.8	3.9
30	Furthergate. 21	Large school room, 1st floor (boys and girls). 6	196	Dec. 18. 9-35 to 9-50. Centre of room amongst scholars.	52	Clean.	Reading & writing.	Do.	All windows open	8.2	3.9

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
31	Farthergate. 21	Class room, ground floor. 1	60	Dec. 18. 9-55 to 10-10. Centre of room amongst scholars.	52	Clean.	Writing.	None since school as- sembled.	All ventilators open.	8.09	3.9
32	Public Higher Grade (boys). 14	Large school room. 1	89	Dec. 18. 11-5 to 11-20. Centre of room amongst scholars.	54 All gas jets burning.	Very clean.	Do.	10-15 to 10-30.	None of the ventilators open.	12.9	3.9
33	Do. 14	Infants' class room 5	27	Dec. 18. 11-27 to 11-43 Centre of room near the scholars.	52	Clean.	Reading.	11 to 11-15	Two windows open.	8.2	3.9
34	Cedar Street. 3	Infants' large school room. 4	101	Dec. 18. 4-8 to 4-23. Centre of room.	59 24 gas jets burning.	Very fair.		School dis- missed at 4-5.	Three windows and seven inlet ventilators open.	10.3	3.9
35	Do. 3	Standard I. class room. 7	41	Dec. 18. 11-13 to 11-28. Centre of room amongst scholars.	62	Fairly clean.	Writing.	10-50 to 11-10.	One window and two inlet ventila- tors open.	11.9	3.9
36	St. James. 4	Large school room (boys and girls). 3	91	Dec. 18. 3-30 to 3-45. Centre of room amongst scholars.	62	Clean.	Do.	2-55 to 3-5	None of the ven- tilators open.	10.9	4.3

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
37	St. James', 4	Infants' school room 4	72	Dec. 18th. 3-47 to 4-3. Centre of room amongst scholars.	53	Clean.		3-15 to 3-25.	One window open also two open fire places and fires burning.	5.6	4.3
38	St. Matthew's 28	North-east class room. 3	47	Dec. 18th. 3 to 3-15. Centre of room amongst scholars.	61.	Fair.	Reading.	None since school assembled.	One window and two inlet ventilators open.	10.4	4.3
39	Do. 28	Large room (infants). 9	49	Dec. 18th. 3-20 to 3-35. Centre of room amongst scholars.	56	Fairly clean.		3 to 3-15.	Two windows and four inlet ventilators open.	7.6	4.3
40	Audley Range. 34	Infants' large room. 6	88	Dec. 18th. 2-20 to 2-35. Centre of room amongst scholars.	58	Do.	Reading & writing.	None since school assembled.	One window open	9.6	4.3
41	Do. 34	Main school room. 5	213	Dec. 18th. 2-37 to 2-52. Centre of room amongst scholars.	60	Do.	Writing.	Do.	Twelve windows and twelve inlet ventilators open.	11.0	4.3
42	Four Lanes End. 2	Large school room 1	70	Dec. 18th. 2-25 to 2-40. Centre of room amongst scholars.	57	Clean.	Reading.	Do.	One window and inlet ventilators open.	11.4	4.3

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
43	Four Lanes Ends. 2	Infants' school room. 2	52	Dec. 18th. 2-50 to 3-5. Centre of room amongst scholars.	58	Clean.	Kinder-garten.	None since school assembled.	All the windows open.	12-0	4-3
44	Bank Top. 35	Infants' main school room. 4	42	Dull. Dec. 21. 10-20 to 10-35. Centre of room.	57	Fairly clean.	Scholars at play.	10-20 to 10-40.	Three windows open.	6-8	3-9
45	Do. 35	Middle class room. 8	56	Dec. 21. 11-27 to 11-42. Centre of room amongst scholars.	54	Do.	Reading.	10-50 to 11-10.	Two windows open.	9-2	3-9
46	Wensley Fold. 31	Main school room 8	157	Dec. 21. 10-45 to 11. Centre of room amongst scholars.	57	Very fair.	Arithmetic and composition.	None since school assembled.	Six windows and nine inlet ventilators open.	4-3	3-9
47	Do. 31	Class room. 2	59	Dec. 21. 11 to 11-15. Centre of room.	58	Fair.	Scholars out at play	11 to 11-15	Two windows and three inlet ventilators open. Fire burning.	4-3	3-9
48	St. Peter's R.C. 44	Large school room 4	200	Dec. 21. 11-10 to 11-25. Centre of room amongst scholars.	60	Clean.	Reading & singing.	10-30 to 10-45.	Two-thirds of windows open.	10-9	3-9

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
49	St. Peter's R.C. 44	Class room off large school room 1	68	Dec. 21st. 11-30 to 11-45. Centre of room amongst scholars.		Clean.	Writing.	10-30 to 10-45.	One-half of windows open.	7.0	3.9
50	Mill Hill. 46	Boys' class room, off large school room 3	47	Dec. 21st. 10-5 to 10-20. Centre of room amongst scholars.	59	Do.	Do.	None since school assembled.	All windows and inlet ventilator open.	4.04	3.9
51	Do. 46	Class room off large school room 1	35	Dec. 21st. 10-25 to 10-40. Centre of room.	58	Do.	Scholars at play.	10-30 to 10-45.	Windows and one inlet ventilator open.	4.08	3.9
52	Witton Infants'. 39	Class room off large room. 2	24	Dec. 21st. 2-35 to 2-50. Centre of room amongst scholars.	57	Very fair.	Writing.	None since school assembled.	One inlet ventilator open.	11.6	3.9
53	Do. 39	Main school room 3	65	Dec. 21st. 2-13 to 2-28. Centre of room amongst scholars.	56	Do.	Drawing & needle-work.	Do.	Four windows and two inlet ventilators open.	10.7	3.9
54	St. Bartholomew's 49	Large school room 1	108	Dec. 21st. 2-15 to 2-30. Centre of room amongst scholars.	60	Clean.	Writing.	Do.	All the windows open.	11.5	3.9

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
55	St. Bartholomew's 49	Infants' class room 10	23	Dec. 21st. 2-45 to 3. Centre of room amongst scholars.	59 Six gas jets burning.	Clean.	Writing.	2-55 to 3-5	One-third of windows and inlet ventilator open.	13-1	3-9
56	Griffin School. 40	Class room Infant school. 1	53	Dec. 21st. 2-14 to 2-29. Centre of room amongst scholars.	58	Fair.	Kinder-garten.	None since school assembled.	Two windows and four inlet ventilators open.	19-1	3-9
57	Do. 40	Main school room (boys) 4	54	Dec. 21st. 2-33 to 2-48. Centre of room near the scholars.	Six gas jets burning.	Do.	Reading.	Do.	Two windows open.	15-1	3-9
58	St. Andrew's. 48	Large school room boys and girls 2	77	Dec. 21st. 3-30 to 3-45. Centre of room amongst scholars.	54	Clean.	Reading & writing.	3-10 to 3-20.	One window open.	19-3	3-9
59	Do. 48	Infants' school room. 3	60	Dec. 21st. 4-0 to 4-15. Centre of room amongst scholars.	52	Do.	Singing.	2-45 to 3.	Windows and ventilators open.	20-6	3-9
60	Christ Church. 42	Class room at the end of large school (Boys) room 2	56	Dull and damp. Dec. 22nd. 2-10 to 2-25. Centre of room in front of scholars.	60	Do.	Reading & writing.	None since school assembled.	All windows and ventilators open.	7-7	3-5

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
61	Christ Church. 42	Girls' large school room. 4	244	Dec. 22nd. 2-40 to 2-55. Centre of room amongst scholars.	60 12 gas jets burning.	Clean.	Reading & writing.	None since school assembled.	Two-thirds windows and all inlet ventilators open.	11.2	3.5
62	St. Luke's. 37	Main school room. 4	150	Dec. 22nd. 2-30 to 2-45. Centre of room amongst scholars.	57 31 gas jets burning.	Fair.	Arithmetic	Do.	Four windows open.	13.9	3.5
63	Do. 37	Small class room off main school room. 5	49	Dec. 22nd. 2-48 to 3-3. Centre of room amongst scholars.	58 10 gas jets burning.	Do.	Writing.	Do.	Three windows and one inlet ventilator open.	9.1	3.5
64	Norfolk Street. 47	Infants' school room. 3	104	Dec. 22nd. 3-45 to 4. Centre of room amongst scholars.	58 12 gas jets burning.	Clean.	Singing.	2-45 to 3.	Two-thirds of windows and all inlet ventilators open.	9.0	3.5
65	Do. 47	Large school room (boys and girls). 4	68	Dec. 22nd. 4-5 to 4-20. Centre of room amongst scholars.	64	Fairly clean.	Reading & writing.	2-55 to 3-5	One window and all inlet ventilators open.	9.2	3.5
66	Emmanuel. 45	Main school room. 8	108	Dec. 22nd. 3-30 to 3-45. Centre of room near the scholars.	57 Five incandescent lights burning.	Do.	Writing & Science.	None since school assembled.	All windows and two inlet ventilators open.	9.5	3.5

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										Inside room	Outside air.
67	Emmanuel, 45	South-east class room off main school 1	67	Dec. 22nd. 3-50 to 4-5. Centre of room.	56 One Incandescent light burning.	Fairly clean.	Scholars at play.	3-49 to 4-4	All windows and six inlet ventilators open.	8-5	3-5
68	St. Paul's, 19	Large school-room (girls) ground floor 5	176	Mild—Dec. 23rd. 10-20 to 10-35. Centre of room amongst scholars.	63	Very clean.	Writing.	None since school assembled.	Two-thirds of windows and all inlet ventilators open.	11-7	3-5
69	Do. 19	Boys' class-room off large school room. 1st floor. 4	28	Dec. 23rd. 10-40 to 10-55. Centre of room in front of scholars.	...	Do.	Reading.	10-45 to 11	Three windows and all inlet ventilators open.	13-7	3-5
70	Moss Street, 9	Main school room (Girls). 12	100	Dec. 23rd. 11-50 to 12-5. Centre of room.	60	Fairly clean.	Scholars dismissed.	11 to 11-10	Seven windows and three inlet ventilators open.	7-8	3-5
71	Do. 9	Infants' main school room. 7	126	Dec. 23rd. 11-30 to 11-45. Centre of room amongst scholars.	61 3 gas jets burning.	Do.	Singing.	10-30 to 10-45.	Eight windows and three inlet ventilators open.	7-0	3-5
72	Accrington Road. 24	Main room mixed school. 2	47	Dec. 23rd. 11-35 to 11-50. Centre of room amongst scholars.	62	Very clean.	Reading.	10-50 to 11-5.	Two-thirds of windows and one inlet ventilator open. Fans not working.	6-6	3-5

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
73	Accrington Road. 24	Class room. 4	41	Dec. 23rd. 11-53 to 12-8. Centre of room.	64	Very clean	Reading.	10-50 to 11-5, during which this room had been flushed with fan.	Two windows open. Fans not working.	6.5	3.5
74	Parish Higher Grade. 27	Lower school room (boys). 3 and 4	76	Dec. 23rd. 2-30 to 2-45. Centre of room amongst scholars.	56	Fairly clean.	Writing.	None since school assembled.	13 windows open.	10.8	3.5
75	Do. 27	Infants' school room. 5	31	Dec. 23rd. 2-52 to 3-7. Centre of room amongst scholars.	62	Do.	Drawing & sewing.	Do.	Two windows open.	12.7	3.5
76	Council School, Lower Darwen. 52	Large school room. 4	91	Very windy. Jan. 13th, 1904. 11-25 to 11-40. Centre of room amongst scholars.	62	Very clean	Reading.	11 to 11-15	One window and five ventilators open.	5.6	3.6
77	Do. 52	Infants' school room. 1	41	Jan. 13th. 11-45 to 12. Centre of room amongst scholars.	56	Do.	Drawing.	11 to 11-15	Two inlet ventilators open.	6.54	3.6
78	St. James' Guide 50	Large school room. 4	78	Jan. 13th. 9-35 to 9-50. Centre of room opposite scholars.	56	Clean.	Reading & writing.	None since school assembled.	One window open.	7.64	3.6

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										Inside room	Outside air.
79	St. James', Guide. 50	Class room, Standards I. and II. 2	27	Jan. 13th. 9-55 to 10-8. Centre of room amongst scholars.		Clean.	Reading.	None since school as- sembled.	One window open.	10-62	3-6
80	St. James', Black- amoor. 51	Large school room. 1	58	Jan. 13th. 10-15 to 10-30. Centre of room opposite scholars.	62	Do.	Reading & writing.	Do.	One open fire- place.	5-69	3-6
81	Do. 51	Infants' school room. 3	35	Jan. 13th. 10-35 to 10-50. Centre of room opposite scholars.	60	Do.	Writing.	Do.	Two windows and two inlet ventila- tors open.	5-7	3-6
82	St. Thomas. 23	Class room, Standards I. and II. 1	48	Dull and cold. Jan. 14th. 10 to 10-15. At far end of room in front of scholars.	50	Moderately clean.	Reading.	Do.	All windows and ventilators open.	6-03	3-5
83	Do. 23	Infants' school room. 7	124	Jan. 14th. 10-25 to 10-40. End of room oppo- site scholars.	58	Very clean	Writing & drilling.	Do.	Two-thirds of windows open.	6-56	3-5
84	St. Joseph's. 30	Boys' large school room. 1	144	Jan. 14th. 10-55 to 11-10. Centre of room in front of scholars.		Fairly clean.	Preparing for dis- missal.	11 to 11-7.	Two windows and two inlet ventila- tors open.	12-1	3-5

ANALYSES OF AIR IN SCHOOLS — Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
85	St. Joseph's, 30	Infants' school room. 8	106	Jan. 14th. 11-25 to 11-40. Centre of room in front of scholars.	58	Clean.	Reading & writing.	10-30 to 10-45.	One-half windows and four inlet ventilators open.	7.77	3.5
86	Whalley New Road (Girls' Higher Grade), 8	Large school room. 7	53	Changeable. Jan. 15th. 11 to 11-15. Centre of room near the scholars.	58	Very clean	Sewing.	15 minutes recreation in school.	One window open.	10.49	3.8
87	Do. 8	Infants' class room. 4	23	Jan. 15th. 11-25 to 11-40. End of room near the scholars.	50	Do.	Writing.	10-45 to 11.	One window open and an open fire-grate.	7.57	3.8
88	St. Alban's (girls), 16	Large school room. 6	129	Jan. 15th. 9-55 to 10-10. End of room opposite scholars.	57	Do.	Arithmetic	None since school assembled.	Two windows open.	14.1	3.8
89	Do. 16	Infants' school room. 2	116	Jan. 15th. 10-20 to 10-35. End of room away from scholars.	58	Clean.	Writing.	Do.	One window open.	14.8	3.8
90	St. Silas', 13	Large room (boys & girls). 4	93	Foggy day. Jan. 18th. 10-5 to 10-20. End of room in front of scholars.	60	Do.	Do.	Do.	Two-thirds of windows open.	17.6	4.7

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										Inside room	Outside air.
91	St. Silas'. 13	Class room at end of large school room. 1	60	Jan. 18th. 10-30 to 10-45. Centre of room amongst scholars.	60	Clean.	Writing.	None since school as- sembled.	Two-thirds of windows open.	14.8	4.7
92	Do. Infants' School 13a	Large school room. 8	52	Jan. 18th. 11-55 to 11-10. Centre of room away from scholars.		Do.	Arranging of scholars.	No play time.	Three windows open.	9.23	4.7
93	Do. 13a	Class room. 7	38	Jan. 18th. 11-20 to 11-35. Centre of room near the scholars.		Do.	Reading.	Do.	No ventilators open.	14.12	4.7
94	St. Michael's (Union Buildings) 12	Infants' school room. 2	88	Jan. 19th. Very foggy day. 9-55 to 10-10. Centre of room near the scholars.	57	Do.	Writing and Sewing.	None since school as- sembled.	Two windows open.	9.68	4.8
95	Do. 12	Infants' class room. 3	24	Jan. 19th. 10-25 to 10-40. End of room near scholars.	52	Do.	Recitation.	Do.	One window and two inlet ventilators open.	8.09	4.8
96	St. Alban's Higher Grade (Boys) 17	Large school room. 13	37	Jan. 19th. 11-10 to 11-25. End of room opposite scholars.	54	Fairly clean.	Writing.	10-45 to 11.	No ventilators open.	12.3	4.8

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of Sample.	(2) Name of School and No. on List.	(3) Room	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
97	Do. 17	Class room off large school room. 12	29	Jan. 19th. 11-40 to 11-55. Centre of room near the scholars.	60	Clean.	Reading and Writing.	10-45 to 11	Two inlet ventilators open.	15-23	4-8
98	Sacred Heart 10	Large school room (boys and girls). 7	32	Jan. 20th. Very foggy day. 9-55 to 10-10. End of room away from the scholars.	58	Very clean	Arithmetic	None since school assembled.	Two windows and three inlet ventilators open.	10-46	5-0
99	Do. 10	Infants' school room. 3	32	Jan. 20th. 10-20 to 10-35. End of room away from scholars.		Clean.	Reading.	Do.	One window and two inlet ventilators open.	14-6	5-0
100	St. Barnabas. 22	Large class underneath the church. 2	52	Jan. 20th. 11-30 to 11-45. Centre of room in front of scholars.		Clean.	Reading.	10-55 to 11-5.	Seven windows open.	12-69	5-0
101	Do. 22	Infants' class room. 8	35	Jan. 20th. 11-5 to 11-20. End of room near scholars.		Fairly clean	Do.	10-30 to 10-45.	No ventilators open.	12-69	5-0
102	Maudsley Street 29	Large school room. 2	126	Jan. 21st. 9-40 to 9-55. Centre of room amongst scholars.	62	Clean.	Sewing	None since school assembled.	One window and one inlet ventilator open.	14-4	3-8

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										Inside room	Outside air.
103	Maudsley Street 29	Infants' school room. 3	91	Jan. 21st. 10-10 to 10-25. End of room away from scholars.	58	Clean.	Writing.	None since school assembled.	Four windows and one inlet ventilator open.	12.96	3.8
104	Mayson Street 33	Class room, 1st floor. 3	12	Jan. 21st. 11 to 11.15. End of room in front of scholars.		Very clean.	Reading.	Do.	Two windows open.	6.6	3.8
105	Do. 33	Work room	1	Jan. 21st. 11-25 to 11-40. End of room.	52	Clean.	Making mats.	No play time.	Three windows open.	4.6	3.8
106	Christ Church, Infants. 43	Large school room. 1	121	Jan. 22nd. Very foggy day. 9-55 to 10-10. Centre of room in front of scholars.	60	Do.	Registering attendance	None since school assembled.	Eight windows and two inlet ventilators open.	12.53	5.0
107	Do. 43	Class room 3	46	Jan. 22nd. 10-15 to 10-30. Centre of room in front of scholars.		Do.	Writing.	Do.	Two windows and two inlet ventilators open.	18.3	5.0

Number of school,	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000.
				Inlet sq. in. per head.	Outlet sq. in. per head.	
1	78	22725	1350	·8	4·1	8·2
1	43	6956	470	·1	3·3	12·8
2	70	16104	792	·9	8·2	11·4
2	52	10086	492	...	...	12·0
3	101	13969	698	2·5	2·2	10·3
3	41	6175	309	1·2	2·7	11·9
4	91	16786	1083	...	19·7	10·9
4	72	17080	1220	...	6·0	5·6
5	89	50858	1770	...	20·2	10·6
5	36	2940	294	...	...	9·2
6	51	8320	520	...	5·6	15·8
6	92	25428	1412	·3	37·6	8·6
7	66	22780	1589	23·0	1·2	13·2
7	97	23538	1552	15·6	9·0	13·5
8	53	25093	1400	...	10·8	10·49
8	23	5436	386	...	...	7·57
9	100	26832	1118	·7	3·4	7·8
9	126	25200	1050	1·4	1·8	7·0
10	32	11525	823	21·0	9·0	10·46
10	32	5230	360	11·3	4·5	14·6
11	263	47020	3101	...	31·2	7·8
11	85	22720	1531	...	15·0	9·2

Number of school.	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000.
				Inlet sq. in. per head.	Outlet sq. in. per head.	
12	88	34799	1564	...	4.9	9.68
12	24	7073	437	6.6	...	8.09
13	93	16976	1212	.7	3.1	17.6
13	60	9528	577	.6	6.0	14.8
13	52	15343	1083	5.7	8.3	9.23
13	38	6545	462	2.7	7.6	14.12
14	89	50388	3196	2.8	1.1	12.9
14	27	5376	336	4.7	9.4	8.2
15	90	32400	1800	...	21.6	13.6
15	17	4660	385	...	6.3	16.8
16	129	41292	2664	1.8	.9	14.1
16	116	23739	1531	.7	.9	14.8
16	86	13278	870	1.2	6.7	7.5
16	223	57746	2406	6.0	10.3	7.5
17	37	17522	876	2.9	6.7	12.3
17	29	4641	335	1.8	1.4	15.23
18	80	21601	1032	...	...	11.1
18	158	33038	1835	8.5	...	7.6
19	176	29396	1755	.5	2.7	11.7
19	28	6695	532	...	32.3	13.7
20	41	12926	1337	...	14.0	20.8
21	196	29632	2055	1.8	8.8	8.2
21	60	9610	620	1.4	4.2	8.09

Number of school.	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000.
				Inlet sq. in. per head.	Outlet sq. in. per head.	
22	52	8281	662	1.2	3.4	12.69
22	35	7119	508	9.1	37.0	12.69
23	48	7995	390	.5	24.0	6.03
23	124	43363	1845	...	...	6.56
24	47	9352	645	8.4	15.2	6.6
24	41	7868	542	8.8	11.0	6.5
25	86	28895	1834	1.6	32.4	7.4
25	129	26376	1675	1.1	31.5	10.9
26	None	16082	1122	...	...	4.4
26	None	17705	1161	...	...	6.6
27	76	19008	1188	4.7	10.5	10.8
27	31	12672	792	11.6	12.9	12.7
28	47	7250	500	.6	3.0	10.4
28	49	14500	1000	6.6	23.5	7.6
29	126	30128	1772	1.1	16.2	14.4
29	91	13003	1130	2.9	1.5	12.96
30	144	42544	1776	.7	9.0	12.1
30	106	14437	962	2.3	.6	7.77
31	157	22461	1182	.7	2.7	4.3
31	59	4648	404	.6	9.7	4.3
32	130	44343	2687	4.2	22.4	13.0
32	55	21021	1386	1.7	33.8	8.4

Number of school.	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000.
				Inlet sq. in. per head.	Outlet sq. in. per head.	
33	12	5940	432	...	48.0	6.6
33	1	...	...	...	...	4.6
34	88	22669	1162	.7	29.4	9.6
34	213	78413	3563	.4	14.3	11.0
35	42	18098	965	...	6.8	6.3
35	56	14962	798	...	10.2	9.2
36	42	5637	451	2.8	12.1	15.9
36	92	24123	1683	7.1	25.5	13.8
37	150	34200	1800	...	6.0	13.9
37	49	6654	409	.9	8.1	9.1
38	85	50160	1672	...	14.1	8.5
38	111	27360	1824	...	.1	7.03
39	24	9769	697	3.0	27.7	11.6
39	65	16501	1178	1.1	6.9	10.7
40	53	10659	561	8.5	24.8	19.1
40	54	20029	1183	5.3	32.0	15.1
41	74	14560	832	...	2.5	7.3
41	42	24949	1425	2.6	35.3	10.9
42	56	13612	907	1.1	...	7.7
42	244	47520	2970	...	2.6	11.2
43	121	29992	1999	1.1	11.2	12.53
43	46	5510	380	2.6	9.8	18.3

Number of school.	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000
				Inlet sq. in. per head.	Outlet sq. in. per head.	
44	200	20625	1374	...	...	10.9
44	68	5700	380	...	...	7.0
45	108	35370	1768	.4	10.1	9.5
45	67	9600	600	9.4	12.9	8.5
46	47	5102	387	.7	.8	4.04
46	35	7020	540	1.0	..	4.08
47	104	9701	606	6.9	5.5	9.0
47	68	16340	1032	16.9	16.9	9.2
48	77	22801	1266	...	45.6	19.3
48	60	12986	721	...	37.0	20.6
49	108	19044	1360	2.5	2.6	11.5
49	25	9026	530	9.6	19.2	13.1
50	78	41370	1798	2.8	33.2	7.64
50	27	4670	373	2.4	24.6	10.62
51	58	55200	2400	1.6	20.4	5.69
51	35	5400	360	...	1.0	5.7
52	91	23958	1409	4.7	12.6	5.6
52	41	10542	620	5.2	3.5	6.5

ANALYSES OF AIR IN BLACKBURN SCHOOLS BY THE MEDICAL OFFICER OF HEALTH.

For the Results in Column 11 of this Table I am indebted to the courtesy of Dr. Pickard.

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
1	St. Gabriel's.	Large school room (mixed), 5	179 No children sent when sample was taken.	March 17. 11-10. Centre of room.	59	Clean.		11 to 11-20.	All windows and doors open.	5.4	3.5
2	Four Lanes End.	Main school room (mixed), 1	59	March 30. 10-35. Centre of room in front of scholars.	58	Do.	Writing.	None since school assembled.	One window and two inlet ventilators open.	14.3	3.4
3	Cedar Street.	Large school room (mixed), 8	90	March 17. 11-50. Centre of room in front of scholars.	58	Do.	Writing & singing.	11 to 11-15	One-third windows and inlet ventilators open.	9.7	3.5
4	St. James, C.E.	Large school room (mixed), 3	68	March 25. 3-30. Centre of room away from scholars.	64	Fairly clean.	Reading & writing.	2-55 to 3-5.	One window open.	6.4	3.3
5	Whalley Range.	Large school room, 2nd floor (mixed), 3	119	March 17. 2-50. Centre of room in front of scholars.	58	Clean.	Reading.	None since school assembled.	Two-thirds windows and all other ventilators open.	5.3	3.5
6	St. Stephen's.	Large school room (mixed), 1	191	March 17. 2-20. Centre of room in front of scholars.	60	Moderately clean.	Writing.	Do.	Windows and all other ventilators open.	13.2	3.5

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
7	St. Michael's (Whalley New Road).	Large school room, 1st floor. 5	91	March 21. 10-35. Centre of room.	56½	Clean.	Scholars at play.	10-30 to 10-45.	Two windows open.	4.2	3.3
8	Whalley New Road Girls' Higher Grade, R.C.	Large school room. 7	51	March 24. 10 a.m. Centre of room in front of scholars.	58	Very clean.	Writing & arithmetic.	None since school assembled.	Two windows open.	7.1	4.2
9	Moss Street.	Large school room (girls). 12	90	March 17. 3-25. Centre of room in front of scholars.	57	Clean.	Reading & writing.	Do.	Windows and all other ventilators open.	15.2	3.5
10	Sacred Heart, R.C.	Classroom. 2	25	March 25. 2-20. Corner of room in front of scholars.		Very clean	Writing.	None since school assembled.	One window and two inlet ventilators open.	7.0	3.3
11	St. John's.	Large school room (boys). 3	131	March 24. 9-30. Centre of room away from scholars.	54	Clean.	Scripture & writing.	Do.	All windows and ventilators open.	7.8	4.2
12	St. Michael's (Union Buildings).	Large school room. 2	86	March 21. 11-25. End of room away from scholars.	58	Do.	Reading & writing.	10-55 to 11-10.	One half of windows open.	5.1	3.3

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Tempera- ture of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
13	St. Silas.	Centre class room, 1st floor, new school. 14	31	March 25. 2-50. Far corner of room near the scholars.		Clean.	Recitation.	None since school as- sembled.	One large window open and ventila- tors.	10.1	3.3
14	Public Higher Grade (Boys), Montague St.	Large class room on the right. 3	57	March 25. 10-15. End of room behind scholars.	50	Do.	Arithmetic	Do.	Three windows and inlet ventila- tors open.	8.3	3.3
15	Public Higher Grade (Girls), Alma Street.	Large school room, 2nd floor. 6	114	March 25. 10-45. End of room away from scholars.	55	Do.	Reading & writing.	Do.	Three windows open.	9.7	3.3
16	St. Alban's (Girls).	Large school room. 6	149	March 21. 9-40. End of room away from scholars.	57	Do.	Reading.	Do.	Three windows and ventilators open.	10.0	3.3
17	St. Alban's (Boys).	Large school room. 13	179	March 21. 10-5. Far end of room away from scholars.	53½	Do.	Reading & writing.	Do.	All the windows open	9.3	3.3
18	Holy Trinity.	Large school room (boys). 2	33	March 21. 4-20. Centre of room away from scholars.	59	Do.	Drawing.	3-5 to 3-15	All windows open.	5.5	3.3

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
19	St. Paul's.	Large school room, 1st floor (boys). 2	114	March 22. 4-25. Centre of room in front of scholars.	62	Clean.	Preparing for dismissal.	3-30 to 3-45.	Windows open.	8.6	4.1
20	St. Patrick's.	Infants' school room. 15	44	March 24. 10-25. Centre of room away from scholars.	58	Do.	Reading.	None since school assembled.	Windows open.	7.9	4.2
21	Furthergate.	Large school room, 1st floor. 6	185	March 21. 2-55. Centre of room away from scholars.	62½	Do.	Writing.	Do.	Two-third windows open.	8.5	3.3
22	St. Barnabas'.	Large school room (mixed). 5	107	March 25. 9-40. End of room away from scholars.	52	Do.	Do.	Do.	Three windows open.	7.4	3.3
23	St. Thomas'.	Large school room (boys). 2	153	March 21. 3-15. End of room away from scholars.	56	Do.	Reading.	Do.	Windows open.	6.5	3.3
24	Accrington Road.	Middle class room (mixed). 2	53	March 21. 2-20. End of room away from scholars.	60	Do.	Writing.	Do.	Window and inlet ventilators open.	7.9	3.3

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Tempera- ture of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
25	Princes Street.	Large school room, ground floor. 6	112	March 25. 11-25. Centre of room in front of scholars.	58	Clean.	Reading & writing.	10-15 to 10-30.	Two-thirds of windows and inlet ventilators open.	7.9	3.3
26	St. Anne's, R.C.	Large school room (girls), 1st floor. 11	57	March 25. 11-45.	53	Fairly clean.	Writing.	10-45 to 10 50.	Four windows open.	5.0	3.3
27	Parish Higher Grade.	Large school room, ground floor. 2	89	March 24. 10-45. Centre of room in front of scholars.	56	Do.	Reading & arithmetic	11-15 to 11-25.	Four windows and inlet ventilators open.	6.9	4.2
28	St. Matthew's,	Large school room. 7	106	March 22. 10-30. Centre of room behind the scholars.	56	Clean.	Reading & sewing.	None since school as- sembled.	Two windows open.	10.1	4.1
29	Maudsley Street.	Large school room.	94	March 22. 10-5. Centre of room in front of scholars.	59	Fairly clean.	Reading & writing.	Do.	Three windows and one inlet ven- tilators open.	8.1	4.1
30	St. Joseph's, R.C.	Large school room (boys). 1	228	March 21. 3-50. Centre of room away from scholars.	58½	Clean.	Reading.	3-15 to 3-30.	Two-thirds of windows open.	8.3	3.3

ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Temperature of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
31	Wensley Fold.	Main school room (mixed), 8	106	March 24. 4-20. End of room in front of scholars,	59	Fairly clean.	Writing.	3-5 to 3-15.	All windows and ventilators open.	10-0	4-2
32	St. Peter's, C.E.	Large school room, ground floor. 1	82	March 22. 3-55. Centre of room opposite scholars.		Clean.	Do.	2-45 to 2-55.	Window and ventilators open.	6-2	4-1
33	Mayson Street.	Class room, 1st floor. 3	8	March 22. 11-0. End of room in front of scholars.		Very clean	Do.	9-30 to 9-45.	Windows open.	5-3	4-1
34	Audley Range.	Large school room (mixed) 5	221	March 22. 9-35. Centre of room behind the scholars.	60½	Clean.	Do.	None since school assembled.	One-half of windows open.	13-7	4-1
35	Bank Top.	School room (infants). 4	95	March 24. 3-45. Centre of room.	63½	Fairly clean.	Scholars dismissed.	2-45 to 2-55.	Three windows and outlets open.	6-8	4-2
36	St. Mary's, R.C.	Large school room, ground floor (boys).	88	March 24. 11-35. End of room away from scholars.	62	Clean.	Reading & writing.	10-40 to 10-50.		9-4	4-2

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Tempera- ture of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
37	St. Luke's.	Large school room, 1st floor (mixed). 4	163	March 24. 3-15. End of room in front of scholars.	57	Fairly clean.	Writing & arithmetic	2-40 to 2-50.	All windows open.	7-2	4-2
38	Park Road.	Large school room, 1st floor (mixed). 1	165	March 22. 11-40. End of room in front of scholars.	55	Clean.	Reading & writing.	11 to 11-15.	Two-thirds of windows open.	9-6	4-1
39	Witton Infants.	Large school room. 3	52	March 24. 2-25.		Clean.	Writing.	None since school as- sembled.	Two-thirds of windows open.	7-2	4-2
40	Griffin School.	Large school room (boys). 4	52	March 24. 2-50. End of room away from scholars.	57	Do.	Do.	Do.	Windows and ven- tilators open.	6-5	4-2
41	All Saints'.	Large school room (mixed). 4	56	March 22. 3-10. Centre of room behind scholars.	62	Fairly clean.	History.	Do.	No ventilators open.	9-9	4-1
42	Christ Church.	Large school room (boys). 1	153	March 22. 2-40. Centre of room in front of scholars.	59	Clean.	Writing.	Do.	Windows and ventilators open.	8-3	4-1

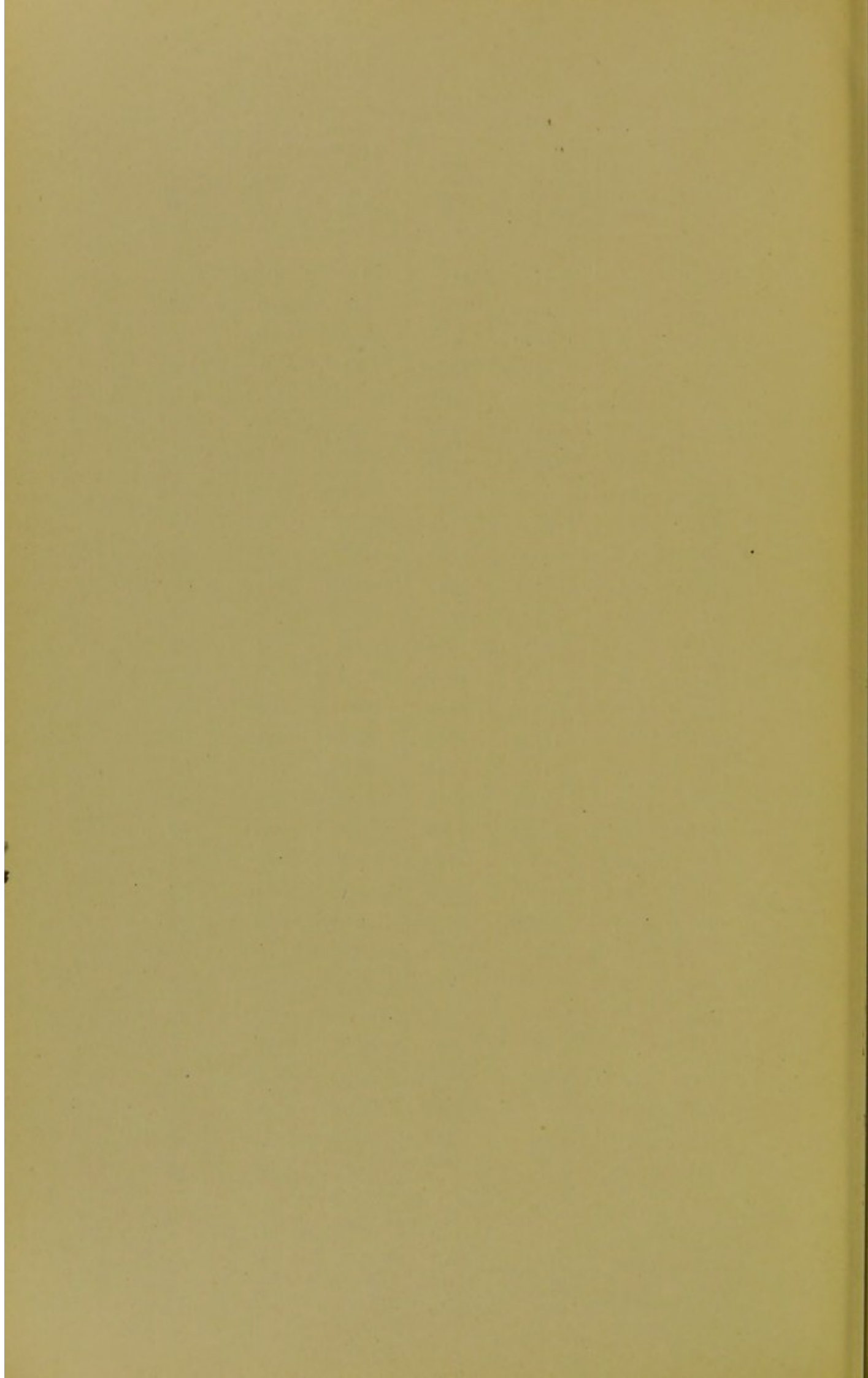
ANALYSES OF AIR IN SCHOOLS.—Continued.

(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Tempera- ture of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
43	Christ Church (Infants).	Large school room. 1	67	March 22. 2-20. Centre of room in front of scholars.	59	Clean.	Writing.	None since school as- sembled.	All windows open.	6.9	4.1
44	St. Peter's R.C.	Large school room (infants) 5	123	March 23. 3-15. Centre of room.	60	Do.	Scholars at play.	3-10 to 3-25.	All windows open.	8.4	3.2
45	Emmanuel.	Large school room (infants) 12	113	March 23. 4-15. Centre of room away from scholars.	62	Fairly clean.	Scholars at play (ex- cept 26).	2-45 to 3.	All windows and ventilators open.	8.7	3.2
46	Mill Hill. Norfolk Street.	Large school room (mixed). 4	76	March 23. 3-45. Centre of room in front of scholars.	59	Do.	Reading & writing.	3-20 to 3-30.	All the windows and ventilators open.	9.5	3.2
47	Mill Hill. New Chapel St.	Large school room (boys). 2	61	March 23. 2-50. Centre of room in front of scholars.	62	Clean.	Writing.	None since school as- sembled.	All windows open.	7.8	3.2
48	St. Andrew's.	Large school room (mixed). 2	96	March 23. 2-20. Centre of room in front of scholars.	59	Do.	Writing & arithmetic	Do.	All windows open.	11.4	3.2

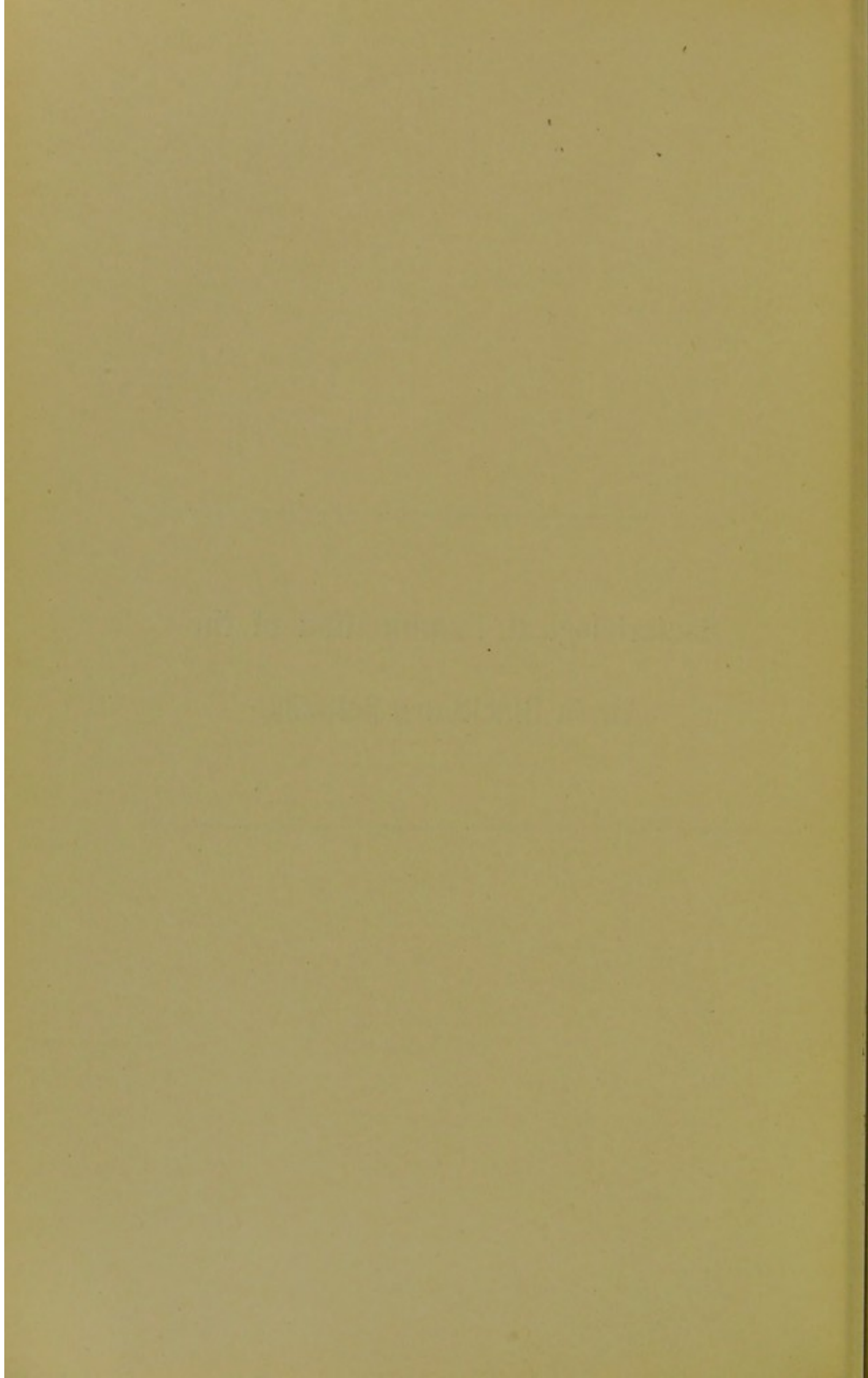
(1) Index No. of School.	(2) Name of School.	(3) Room and No. of Room on Plan.	(4) No. of Children present.	(5) Date, Time and Position.	(6) Tempera- ture of Room.	(7) Condition of Floor.	(8) Kind of work going on in school.	(9) Last Playtime.	(10) State of ventilating openings at time of collection of sample.	(11) Volumes of CO ₂ per 10,000.	
										Inside room	Outside air.
49	St. Bartholomew's.	Large school room (mixed). 1	101	March 23. 11-40. Centre of room in front of scholars.	60	Fairly clean.	Reading & writing.	10-55 to 11-10.	All windows open.	8.2	3.2
50	St. James (Guide).	Large school room (mixed). 4	44	March 23. 9-50.	54	Clean.	Writing.	None since school as- sembled.	One window open.	7.4	3.2
51	St. James' (Blackmoor).	Large school room (mixed). 1	61	March 23. 10-15. Centre of room away from scholars.	59	Do.	Do.	Do.	No ventilators open.	7.4	3.2
52	Lower Darwin, Council.	Large school room. 4	63	March 23. 10-45. Centre of room behind scholars.	62	Do.	Very clean.	Do.	Three windows and four inlet ventilators open.	5.5	3.2

Number of School.	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000.
				Inlet sq. in. per head.	Outlet sq. in. per head.	
1	179	22725	1350	·3	1·8	5·4
2	59	16104	792	1·1	9·7	14·3
3	90	28140	1407	4·4	3·7	9·7
4	68	16786	1083	...	26·4	6·4
5	119	50858	1770	...	15·1	5·3
6	191	46200	2100	...	18·8	13·2
7	91	23538	1552	16·7	9·6	4·2
8	51	25093	1400	...	11·2	7·1
9	90	26832	1118	·8	3·7	15·2
10	25	4376	312	9·0	5·8	7·0
11	174	47020	3101	...	47·1	7·8
12	86	34799	1564	...	5·0	5·1
13	31	7581	441	5·2	29·0	10·1
14	57	5932	370	1·8	·6	8·3
15	114	32400	1800	...	17·0	9·7
16	149	41292	2664	1·6	·8	10·0
17	179	17522	876	·6	1·4	9·3
18	33	21601	1032	...	...	5·5
19	114	36502	2355	...	11·5	8·6
20	44	12926	1337	...	13·0	7·9
21	185	29632	2055	1·9	9·3	8·5
22	100	31044	2115	1·0	86·8	7·4
23	153	25317	1235	·4	11·3	6·5
24	53	9352	645	7·4	13·6	7·9
25	112	26376	1675	1·3	36·3	7·9
26	57	17705	1161	·4	4·1	5·0
27	89	24960	1560	·6	5·6	6·9
28	106	38700	1800	...	48·9	10·1
29	94	40079	2357	...	33·7	8·1
30	228	42544	1776	·4	5·6	8·3

Number of School.	Number of scholars present.	Total cubic capacity of room in cubic feet.	Total floor space in square feet.	VENTILATION.		CO ₂ per 10000.
				Inlet sq. in. per head.	Outlet sq. in. per head.	
31	106	22416	1182	1·0	4·0	10·0
32	82	33670	2220	6·9	10·5	6·2
33	8	5940	432	...	72·0	5·3
34	221	78413	3563	·4	13·7	13·7
35	95	18098	965	...	3·0	6·8
36	88	24123	1683	7·5	26·6	9·4
37	163	34200	1800	...	5·6	7·2
38	165	50160	1672	...	7·2	9·6
39	52	16501	1178	1·4	8·6	7·2
40	52	20029	1183	5·5	33·2	6·5
41	56	24949	1425	2·0	26·5	9·9
42	153	31161	2077	3·5	1·6	8·3
43	67	29992	1999	2·0	20·2	6·9
44	123	18858	1257	...	...	8·4
45	113	25316	1266	·09	4·0	8·7
46	76	16340	1032	15·1	15·1	9·5
47	61	21468	1516	...	...	7·8
48	96	22801	1266	...	36·6	11·4
49	101	19044	1360	2·7	2·8	8·2
50	44	41370	1798	5·1	58·9	7·4
51	61	55200	2400	1·5	19·4	7·4
52	63	23958	1409	6·8	18·2	5·5



**Bacteriological Examination of the
Air in Blackburn Schools.**



CHAPTER IV.

Floating about in the air there are particles of dust which consist of organic substances and dried up colonies of micro-organisms. Some of these may sink to the floor by gravity, or be disseminated by currents of air. They are referred to as germs, microbes, or bacteria.

The object of these investigations has been to transmit some of them from the air of schoolrooms to a suitable nutrient medium in which they can be grown, and afterwards counted and examined.

As a rule, the air contains moulds, yeasts, and spores of bacteria. Microbes in air vary exceedingly in number, according to different conditions of season, time of day, and locality.

On the open sea, far from shore, and on high mountains, the air is practically free from germs, whereas in the air of the plains 100 to 500 germs have been counted in each cubic centimetre.

The air of rooms contains a large number of germs, especially when they have been blown from the floors and walls by draughts of air. It is significant that this dissemination of the germs by currents of air only takes place from dry surfaces, as germs cling to moist surfaces. This is the reason why the air of well-constructed sewers is so free from them except where splashing occurs. Also, the importance of a wet cleansing of school floors is evident from this fact.

Little of a definite nature is known regarding, these germs, but their variety is extremely great. Many of them are harmless to man, but they may include putrefactive organisms and specific germs of disease, such as the bacilli of diphtheria and tuberculosis.

Miquel gives the following results:—

Place.	Microbes per cubic metre of Air.
High mountains	1
Mid-Atlantic	6
Summit of Pantheon (Paris)	200
Hôtel de Dieu (Hospital, Paris).....	79,000

Fischer found no microbes beyond 120 miles from land. The numbers diminish rapidly with elevation above the ground level, and after rain.

Method of Cultivation of Bacteria.

Nutrient media are employed in bacteriology in which micro-organisms will grow and multiply so that they may be counted, and so that their peculiarities may be distinguished more easily. These media may be liquid or solid, and may also be divided into Inorganic and Organic. The Organic media are themselves sub-divided into Vegetable and Animal.

The media which I used were Gelatine, and Agar.

A small quantity of the medium was liquefied by heat and poured into a Petris' capsule, which is a circular flat glass dish, about 3in. in diameter and $\frac{3}{8}$ in. in depth, with a circular flat glass cover.

Everything was well sterilized, and care was taken to obtain an even layer of the medium on the bottom of the Petri's dish. The plates were then taken to the schools. One was placed upon a desk in a room, and the cover taken off for ten minutes, and in some cases for a longer time, and then replaced.

If the medium used was gelatine the plates were taken to the Health Office, and the colonies were allowed to grow at the air temperature. These colonies were counted by the aid of a magnifying glass, in four or five days. Gelatine melts at about 22° Centigrade, and therefore Agar is often used for the plate process instead of gelatine. Agar becomes fluid at 90° Centigrade, and passes into the solid state at 40°C.

Therefore agar plates possess the special advantage of keeping for a considerable time at incubation temperature and not undergoing liquefaction. Hence the agar plates were placed in a warm incubator at 37°C., and the colonies were counted in 24 and 40 hours respectively. The gelatine or agar is kept in sterilised test tubes plugged with cotton wool until it is necessary to melt it for use in one of the Petri's capsules.

The method of counting the bacteria in plate cultivations is based upon the belief that wherever there is a bacterium a colony will grow. Of course, all the colonies are not at the same stage of development, and they are not equally distributed.

Whilst counting the colonies note was taken of the following points:—

- I. Whether the colonies have liquefied the medium or not. This liquefaction is more likely to occur in the case of gelatine than agar.
- II. The colour of the colonies.

- III. Their shape—whether round or irregular.
- IV. If their margins are fibrillated, undulated, or smooth.
- V. If the colonies grow well in the depth of the medium, or on its surface.

The objection to the plate method (introduced by Koch) of examining the air of a room bacteriologically is that the observer is unable to state the number of bacteria present in a given quantity of air.

The results of my bacteriological examinations of the air of schools show in no way a complete investigation into the total number of germs present in air, and are not quantitative; that is, they do not show the number of germs present in each cubic metre of air.

Such is not possible under present conditions. These results, however do enable one to compare qualitatively the air of various schools with each other.

Cultivations were made from certain colonies on the plates into test tubes containing a nutrient medium.

The varieties of bacteria present were: yeasts, moulds, and certain coloured bacilli.

I have exposed 80 plates altogether in the various schools of the town, viz.: 24 gelatine plates, and 56 agar plates.

I wish to acknowledge Dr. Pickard's assistance in counting the colonies on the agar plates.

The colonies on the gelatine plates were counted in about five days, as all the colonies, which would grow under the conditions previously described, had grown in this time.

After exposing the 24 gelatine plates, I used agar as the nutrient medium, on account of its superiority over gelatine, and in order to economize time.

The colonies on the agar plates were counted in 24 hours, and again in 40 hours after they had been incubated at 37°C. The exact numbers present in 24 hours have been recorded in the appended table, and the approximate numbers (as they were often so great) have been recorded after an incubation of 40 hours.

If the number of colonies remained the same, or developed only 5 per cent. more in 40 hours as in 24 hours, the approximate number has been described as "no increase"; if there were 30 per cent. more present in 40 hours, as "slight increase," and if there were still greater increase in 40 hours they have been described as "large increase," and "very large increase," respectively.

After an incubation of 40 hours it was frequently noticed that there was a great mass of colonies at one side of the plate, probably the result of currents of air driving the germs across the plate, so that they were caught at the far side.

The following were the chief points observed whilst counting the colonies.

The colonies on the agar plates varied greatly in size. Many of them had regular margins, were opaque, and yellow, and white in colour. Others had two concentric rings—the central portion only being opaque. Very few colonies caused any liquefaction of the agar, and only a few moulds were present.

Some colonies had irregular margins, and a few were star-shaped. There was a great preponderance of the white over the yellow colonies.

As a rule, those plates showing a very great number of colonies were the ones which showed also the presence of moulds.

Careful note was taken of the conditions present when the agar plates were exposed in schools, and these I have tabulated as follows:

- I. Index Number.
- II. Name of School.
- III. No. of Room on the plan, and its floor area in square feet.
- IV. No. of Scholars in the room when the sample was taken.
- V. Date, Time, and Position of plate in the room.
- VI. Temperature of the room in degrees Fahrenheit.
- VII. Condition of the floor as to cleanliness.
- VIII. Kind of work going on in the room, and length of time the plate was exposed.
- IX. Length of time the scholars had been in the room since the school opened, or since the last play-time.
- X. State of the ventilation openings during the exposure of the plate.
- XI. Amount of floor space in square feet for each scholar present.
- XII. Number of colonies growing at 37°C. in:—
 - a. 24 hours.
 - b. 40 hours.

I will now give a description of the method of preparing the nutrient media for these plates.

Preparation of Nutrient Gelatine

The peptone bouillon gelatine is prepared in the following way:— 500 grammes of meat, freed from fat, are minced finely, mixed with a litre of water, and allowed to stand for 24 hours. The mass of meat is then squeezed out, the filtrate boiled in a water bath for three-quarters of an hour until all albuminoid bodies are precipitated, and then filtered again.

Another way is to place the meat in one litre of water at once upon the fire, and boil for several hours. It is then allowed to cool for the fat to separate, and filtered, sufficient water being added to replace that which has been lost by evaporation during the boiling. 100 grms. of gelatine, 10 grms. of colourless peptone, and 5 grms. of common salt are next added to the filtrate, and this mixture is allowed to stand for some time and then heated in the water bath, until all the gelatine is dissolved. Water must again be added to replace that lost by evaporation. The reaction of gelatine is acid, so that Sodium Carbonate must be added in order to make it exactly neutral. The mixture is then clarified by adding the white of an egg, boiling again, and filtering.

The gelatine, when ready, should be clear, and of an amber-yellow colour, and should not become cloudy on heating.

About 10 cubic centimetres are then placed in sterilized test tubes, the mouths of which are plugged with cotton-wool. These are then kept until they are needed for the plates, when the gelatine in the test tube is heated until it is fluid, and poured into the sterilized Petri's capsule, so as to form an even layer.

The Petri is ready for use when the gelatine has set.

During the preparation of this medium the gelatine must not be kept continuously at a high temperature, or it may not solidify when cold. It must, therefore, be heated in the steam apparatus for 15 minutes on three successive days, so that it may be quite sterile.

Preparation of Nutrient Agar.

Agar-agar is a vegetable jelly obtained from different algae growing in the East Indies and Japan. It was introduced into bacteriology by Hesse, on account of its characteristic of remaining in the solid state at 40°C.; and only melting completely at 90°C. It is therefore very useful as a culture-medium for those micro-organisms which must be grown at the higher temperatures in the incubating chamber.

Agar-agar appears commercially in the form of transparent strips or four-cornered pieces, or as a white powder, and swells up in water.

The agar plates used in these investigations were prepared as follows:—One pound of beefsteak was minced, and digested with one litre of water for 30 minutes. This was then strained, and 5 grammes of common salt and 10 grammes of peptone were added. It was exactly neutralised with caustic soda, and made alkaline with Sodium Carbonate (1 c.c. of normal Sodium Carbonate to every 100 c.c. of broth). Twenty grammes of agar were soaked in dilute acetic acid, and then washed free from acid. The agar was then added to the broth as above, and the mixture left in the steriliser until the agar had dissolved. The whole was cleared with white of egg, filtered in the steriliser, and run into previously sterilised Petri dishes.

Gelatine Plates.

The following are the results of counting colonies from the air of schools on Gelatine Plates.

No. 1.—St. John's School (Infants' Department).

Plate exposed for 20 minutes, on October 15th, 1903; grown for five days at ordinary temperature; examined on October 19th.

20 Colonies present.—One yellow sarcina, one whitish colony with round edges (Staphylococci), one whitish colony with curling processes, and 17 yellowish colonies with round edges (Staphylococci). No colonies had liquefied in seven days.

No. 2.—St. John's School (Girls' Department).

Exposed as above.

23 Colonies counted, consisting of two whitish colonies with round edges, and 21 yellowish colonies also with round edges (Staphylococci).

No colonies had liquefied the gelatine in seven days.

No. 3.—St. John's School (Boys' Department).

12 Colonies counted.

The air of the infants' and girls' departments in the rooms tested contained about the same number of micro-organisms, and the air of the boys' department rather more than half that number.

It may be noted that this latter room was the most efficiently ventilated.

No. 4.—St. Anne's School (Infants' Department).

Exposed for 20 minutes, on October 16th, 1903.

65 Colonies counted, on October 22nd, namely several whitish liquefying colonies, many non-liquefying colonies both white and yellow.

There were no moulds.

No. 5.—St. Anne's School (Girls' Department).

Exposed as above in the main schoolroom.

73 Colonies counted, which were similar to those in the infants' department, except that some moulds were present.

The bacterial purity of these two rooms was, therefore, about equal.

No. 6.—Holy Trinity School (Infants' Department).

Exposed on October 19th, 1903, in the main schoolroom for 20 minutes.

85 Colonies counted, on October 24th, consisting of four yellow liquefying colonies, and many white and yellow non-liquefying colonies with round edges.

There were no moulds.

No. 7.—Holy Trinity School (Girls' Department).

Exposed in main room as above.

110 Colonies counted, including two yellowish white liquefying colonies, and the remainder as in the infants' schoolroom.

No. 8.—Audley Range School (Mixed Department).

Exposed at 11 a.m., on November 25th, 1903, in the large schoolroom for 20 minutes.

338 Colonies counted, on November 30th, consisting of a few yellowish liquefying colonies, a great number of small white, glistening colonies with regular margins, and a number of yellowish colonies with regular margins.

There were no moulds.

No. 9.—Audley Range School (Infants' Department).

Plate exposed as in mixed schoolroom.

197 Colonies counted, similar in character.

No. 10.—St. Gabriel's School.

Plate exposed in large schoolroom, for 20 minutes, on November 27th, 1903, half-an-hour after play-time.

103 Colonies counted on December 2nd.

No. 11.—St. Gabriel's School.

Plate exposed in class-room as above.

184 Colonies counted.

The types of colonies in each of the above two plates were the same, i.e. : No moulds or liquefying organisms, and numbers of white and yellowish colonies with circular margins.

No. 12.—Moss Street School.

Plate exposed for 20 minutes, at 10.45 a.m., on December 27th, 1903, in infants' schoolroom. Classes were changed during exposure of the plate.

49 Colonies counted on December 2nd, 1903.

No. 13.—Moss Street School (Girls' Schoolroom).

Time, 11.5 a.m. No movement of classes during exposure of plate.
31 Colonies counted.

The colonies in the above two rooms were similar to those found at St. Gabriel's.

No. 14.—St. Joseph's School (Boys' Main Schoolroom).

Plate exposed for 20 minutes, on November 30th, 1903, at 2.30 p.m.
68 Colonies counted on December 5th, 1903.

No. 15.—Accrington Road School.

Exposed in Part I. of the large schoolroom for 20 minutes, at 10.30 a.m., on November 30th, 1903. The room was emptied during the time the plate was exposed.

77 Colonies counted on December 5th, 1903, consisting chiefly of white colonies with circular margins, and a few yellowish colonies.

There were no moulds or liquefying organisms.

No. 16.—Accrington Road School (Infants' Large Schoolroom.)

Exposed at 11 a.m., for 20 minutes, on November 30th, 1903.

The children were marching round the room during a portion of the time the plate was exposed.

15 Colonies counted on December 5th, 1903. There was one mould; the remainder were small white colonies with even circular margins.

No 17.—St. Matthew's School (Large Schoolroom in the Mixed Department).

Plate exposed for 20 minutes, on October 21st, 1903.

54 Colonies counted on October 27th, 1903, consisting of: one mould, one liquefying colony, many lemon-coloured round colonies, and many white colonies (also round).

No. 18.—St. Matthew's School (Infants' Classroom).

91 Colonies counted, consisting of one mould, two yellow liquefying colonies, and the remainder as in the large room of the mixed department.

No. 19.—Princes Street School (Mixed Department).

Exposed for 15 minutes, at 11.35 a.m., on December 17th, 1903, in centre of room amongst scholars. The day was foggy and 12 gas jets were burning. The scholars had been in school 20 minutes after the last play-time. Eight windows and outlets in ceiling were open.

82 Colonies counted on December 23rd.

No moulds or liquefaction.

No. 20.—Princes Street School.

Plate exposed in a classroom in mixed department, on desk behind the scholars.

115 Colonies counted, consisting of two liquefying colonies, one mould, and the remainder of yellow and white colonies with round margins.

No. 21.—Princes Street School (Infants' Department).

Plate exposed at 11.40 a.m., in large schoolroom (first floor), for 15 minutes. Very small number of children present in proportion to the size of the room.

11 yellow and white colonies counted.

No moulds or liquefaction.

No. 22.—St. Anne's School (Infants' Department).

Plate exposed at 12, noon, on December 17th, 1903, in large schoolroom, amongst the scholars.

464 Colonies counted on December 23rd, 1903, consisting of white and yellow organisms, some of which were star-shaped, and others which had liquefied the gelatine.

There were no moulds.

Four hopper windows were open during exposure.

No. 23.—St. Anne's School (Infants' Department).

Middle Class-room.

276 Colonies counted. Some moulds. No liquefaction.

No. 24.—St. Anne's School (Infants' Department).

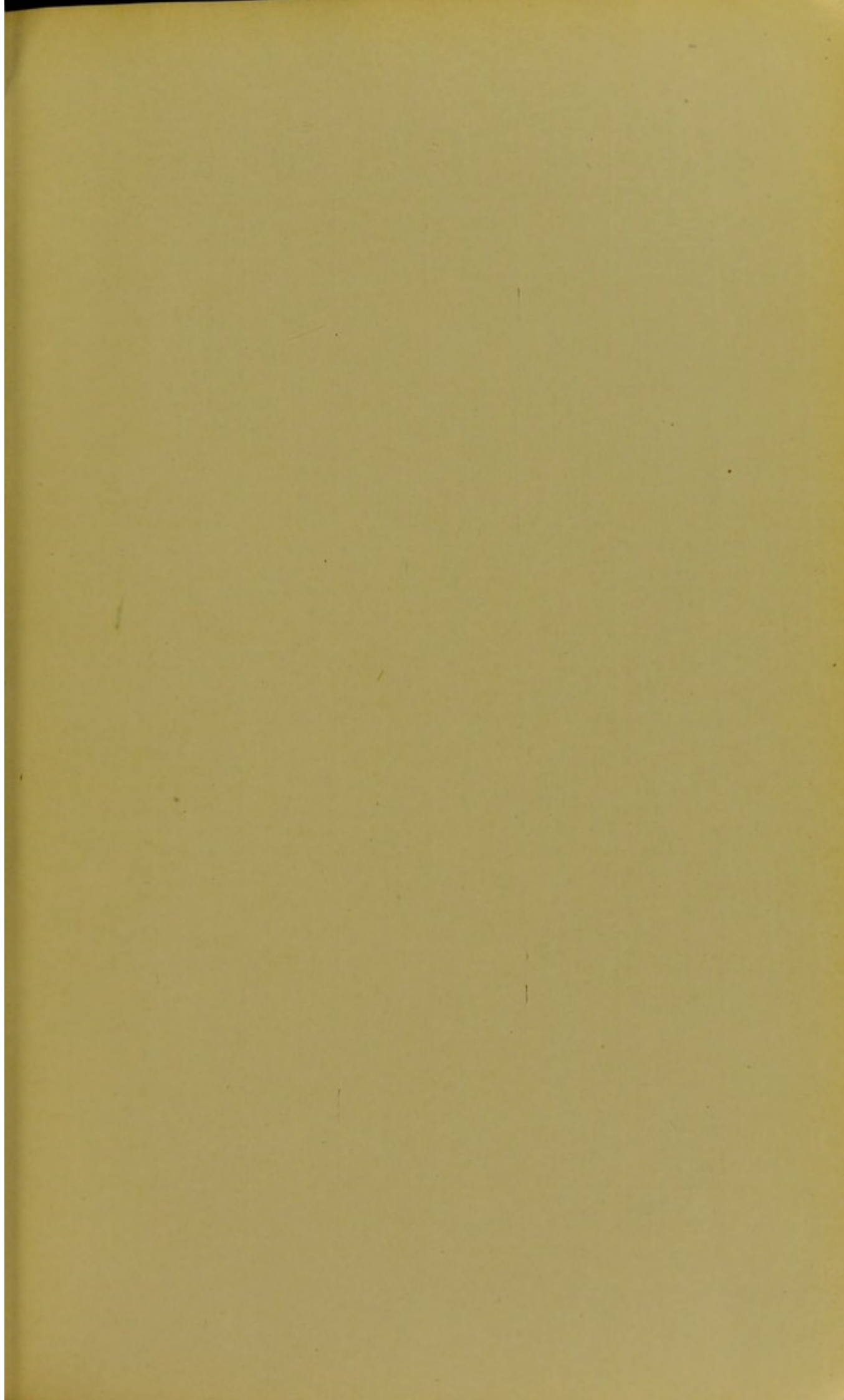
Babies' Room.

572 Colonies counted. No moulds or liquefaction.

During the last five minutes of exposure of the above three plates the children marched out of the rooms, thus creating currents of air.

Agar Plates.

The following table shows the results of counting colonies from the air of schools on agar plates, together with a full account of the conditions under which the samples were taken.



BACTERIOLOGICAL EXAMINATION OF THE AIR OF BLACKBURN SCHOOLS ON AGAR PLATES.

(1) Index Number	(2) Name of School.	(3) No. of Room on Plan and Floor area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate.	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of Plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each scholar present	(12) Number of colonies growing at blood heat, 37° C.	
											In 24 hours	In 40 hours
1	St. Luke's	No. 4 First Floor 1800 sq. ft.	127 had been present	May 3rd, 10-50 a.m. On desk amongst the scholars' places	58	Clean	Reading 20 minutes	Scholars were at play, but came in when plate had been ex- posed 5 minutes	11 windows open	14.1	84	Slight increase
2	Witton Infants'	No. 3 1178 sq. ft.	84	May 3rd, 11-25 a.m. On desk amongst the scholars	60	Clean	Reading 20 minutes	20 minutes since last playtime	4 hoppers open	14.0	6	No increase
3	Witton Infants	No. 2 697 sq. ft.	31	May 3rd, 11-25 a.m. Behind the scholars	—	Clean	Writing 15 minutes	"	1 hopper open	22.5	32	Very large increase
4	Griffin Boys'	No. 4 & 4A 1183 sq. ft.	41	May 3rd, 11-45 a.m. In front of scholars	59	Clean	Writing 15 minutes	60 minutes since last playtime	3 hoppers and 2 Sherringham valves open	28.8	24	Slight increase
5	Griffin Girls'	No. 6 1314 sq. ft.	12	May 3rd, 11-45 a.m. 10ft. in front of scholars	59	Clean	Reading 20 minutes	50 minutes since last playtime	8 hoppers, 2 hinge win- dows, and 3 Sherringham valves open	109.5	7	No increase
6	St. Peter's R.C. Mill Hill	No. 4 1374 sq. ft.	130 had been present	May 3rd, 12-55 p.m. On desk	50	Clean	20 minutes	Scholars left 45 minutes before	3 hoppers open	10.5	36	No increase

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each scholar present	(12) Number of colonies growing at blood heat, 37° C.	
											In 24 hours	In 40 hours
7	St. Bartholomew's	No. 11 526 sq. ft.	45	May 3rd, 3-10 p.m. On teachers desk in front of scholars	55	Clean	10 minutes	Scholars came in from play when plate had been exposed 5 minutes	2 hinge and 1 hopper win- dows open	117	215	Large increase
8	Lower Darwen	No. 4 1409 sq. ft.	90	May 3rd, 4 p.m. In front of scholars	—	Very Clean	20 minutes	30 minutes	5 Sherringham valves open	15.6	36	No increase
9	St. James' Blackamoor	No. 1 2400 sq. ft.	—	May 3rd, 4-35 p.m. On one of scholars' desks	63	Clean	30 minutes	Scholars had left 5 minutes before ex- posure of plates	No windows open	—	39	Slight increase
10	St. John's Infants'	No. 4 1531 sq. ft.	72	May 5th, 2-10 p.m. On desk amongst scholars	59	Clean	Drawing 10 minutes	25 minutes	All windows open	21.2	5	No increase
11	Whalley Range Infants'	No. 4 1017 sq. ft.	76	May 5th, 2-25 p.m. On desk amongst scholars	60	Clean	Writing 10 minutes	40 minutes	All windows open	13.3	17	No increase
12	St. Alban's Higher Grade, Whalley New Road	No. 7 1400 sq. ft.	49	May 5th, 2-45 p.m. On desk amongst scholars	62	Very Clean	Writing 10 minutes	60 minutes	Two-thirds of windows open	28.5	6	Slight increase

BACTERIOLOGICAL EXAMINATION OF AIR.—Continued

(4) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of Plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each person present	(12) Number of colonies growing at blood heat, 37° C.	
											In 24 hours	In 40 hours
13	St. Alban's Boys', Larkhill	No. 2 870 sq. ft.	78	May 5th, 3-15 p.m. On desk amongst scholars	58	Fairly Clean	Reading and writing 10 minutes	90 minutes	All windows and two Tobin's tubes open	11.1	56	No increase
14	St. Alban's Girls'	No. 6 2664 sq. ft.	153	May 5th, 3-30 p.m. On desk in centre of room.	63	Clean	Reading and writing 10 minutes	105 minutes No playtime (wet day)	One half the windows open	17.4	61	Large increase
15	St. Michael's, Whalley New Road	No. 5 1552 sq. ft.	75	May 5th, 2-50 p.m. On desk in centre of room	59	Clean	Writing 10 minutes	75 minutes	One half the windows open and 12 gas jets burning	20.7	39	No increase
16	Holy Trinity Boys'	No. 2 1032 sq. ft.	84	May 5th, 3-45 p.m. On desk in centre of room	63	Fairly Clean	Writing 10 minutes	120 minutes	All windows and door open	12.2	24	No increase
17	Parish Higher Grade	No. 5 530 sq. ft.	34	May 5th, 4-5 p.m. On desk in centre of room	61	Fairly Clean	Reading 10 minutes	35 minutes	One window open, three gas jets burning	15.6	5	No increase
18	Princes St.	No. 6 1675 sq. ft.	118	May 5th, 4-20 p.m. In centre of room	59	Fairly Clean	Scholars just dismissed 10 minutes	50 minutes	All windows open	14.1	2	No increase

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of Plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each scholar present	(12) Number of colonies growing at blood heat 37° C.	
											In 24 hours	In 40 hours
19	Park Road	No. 7 717 sq. ft.	54	May 9th, 9-45 a.m. Amongst scholars	54	Fairly Clean	Reading 10 minutes	45 minutes	3 windows open	13.2	39	large increase
20	Christ Church Boys'	No. 3 396 sq. ft.	43	May 9th, 10-5 a.m. In front of scholars	50	Clean	Reading 10 minutes	65 minutes	2 windows open	9.2	11	slight increase
21	All Saints'	No. 3 704 sq. ft.	45	May 9th, 10-30 a.m. Amongst scholars	50	Clean	Writing 10 minutes	90 minutes	2 windows and outlets in ceiling open	15.6	11	large increase
22	St. Mary's R.C., Dean Street	No. 3 370 sq. ft.	45	May 9th, 10-45 a.m. Amongst scholars	—	Clean	10 minutes	105 minutes Scholars went to play during exposure	1 window open, door opened several times	8.2	49	large increase
23	St. Peter's C.E.	No. 2 1386 sq. ft.	63	May 9th, 11-5 a.m. In front of scholars	57	Clean	Writing 10 minutes	5 minutes since playtime	2 windows open	22.0	19	very large increase
24	St. Anne's Infants'	No. 5 1122 sq. ft.	76	May 9th, 11-20 a.m. Centre of room	52	Very Clean	Reading and Writing 10 minutes	40 minutes	6 windows open, door opened several times	14.7	200	large increase

BACTERIOLOGICAL EXAMINATION OF AIR.—Continued.

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Con- dition of Floor	(8) Kind of work going on in the room and length of exposure of plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each scholar present	(12) Number of colonies growing at blood heat—37° C.	
											In 24 hours	In 40 hours
25	St. Paul's Girls'	No. 5 1755 sq. ft.	148	May 9th, 11-35 a.m. In front of scholars	60	Clean	Reading and Writing 10 minutes	20 minutes	5 windows and outlet in ceiling open	11.8	40	Very large increase
26	St. George's, Alma Street	No. 6 1800 sq. ft.	97	May 9th, 11-55 a.m.	—	Clean	Reading and Writing 10 minutes	45 minutes	5 windows and outlet in ceiling open, scholars dis- missed at 12 o'clock	18.5	12	Large increase
27	Higher Grade Montague Street	No. 4 711 sq. ft.	56	May 9th, 2-20 p.m. Amongst scholars	57	Clean	Reading and Writing 10 minutes	20 minutes	All windows shut, 5 win- dow sill inlets open	12.8	25	No increase
28	Sacred Heart	No. 7 823 sq. ft.	11 52 from 9 to 9-55	May 10th, 10-5 a.m. Centre of room	51	Very Clean	10 minutes	65 minutes	1 window, 1 Tobin's tube, and outlets in ceiling open	7.4.8	15	Slight increase
29	St. Silas'	No. 14 441 sq. ft.	35	May 10th, 10-20 a.m. Amongst scholars	54	Very Clean	Writing 10 minutes	80 minutes	5 windows, 2 Sherringham valves, and outlets in ceil- ing open fans <i>not working</i>	12.6	16	Slight increase
30	St. Barnabas'	No. 13 714 sq. ft.	66	May 10th, 10-50 a.m. Amongst scholars	56	Clean	Writing 10 minutes	110 minutes	2 windows and outlet in ceil- ing open	10.8	34	Slight increase

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of Plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each scholar present		(12) Number of colonies growing at blood heat 37° C.
										In 24 hours	In 40 hours	
31	Moss Street Boys'	No. 2 1125 sq. ft.	47	May 10th, 11-30 a.m. Amongst scholars	58	Fairly Clean	Reading 10 minutes	10 minutes	6 windows, 2 window sill in- lets, and 3 out- lets in ceiling open	23.8	21	Very large increase
32	Furthergate	No. 1 620 sq. ft.	61	May 10th, 11-50 a.m. Amongst scholars	—	Very Clean	Singing 10 minutes	65 minutes	2 windows and outlets in ceil- ing open	10.1	33	Slight increase
33	St. Matthew's	No. 1 416 sq. ft.	30	May 10th, 2-15 p.m. In front of scholars	54	Fairly Clean	Writing 10 minutes	45 minutes	2 windows and 3 window sill inlets open	13.8	20	Slight increase
34	Maudsley St.	No. 1 C 1132 sq. ft.	67	May 10th, 2-30 p.m. Amongst scholars	62	Very Clean (new floor)	Writing 10 minutes	60 minutes	2 windows and outlets in ceiling open	16.8	11	No increase
35	Audley Range	No. 5 3563 sq. ft.	233	May 10th, 2-55 p.m. In front of scholars	66	Very Clean	Writing 10 minutes	85 minutes	7 windows open	15.3	17	Slight increase
36	St. Joseph's Boys'	No. 1 1776 sq. ft.	87	May 10th, 3-15 p.m. In front of scholars	56	Fairly Clean	Reading and Writing 10 minutes	10 minutes	3 windows and 2 Tobin's tubes open	20.4	53	Large increase

BACTERIOLOGICAL EXAMINATION OF AIR.—Continued.

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Place	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of Plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of Floor space in sq. ft. for each person present	(12) Number of colonies growing at blood heat, 37° C.	
											In 24 hours	In 40 hours
37	St. Joseph's Girls'	No. 6 1622 sq. ft.	89	May 10th, 3-30 p.m. In front of scholars	53	Very Clean	Reading and Writing 10 minutes	35 minutes	4 windows open	182.3	12	Very large increase
38	St. Thomas'	No. 7 1845 sq. ft.	142	May 10th, 3-50 p.m. Amongst scholars	62	Fairly Clean	Reading and Writing 10 minutes	35 minutes	4 windows and outlets in ceiling open	12.9	54	Very large increase
39	Accrington Road	No. 2 645 sq. ft.	55	May 10th, 4-20 p.m. Centre of room	58	Clean	Scholars just dismissed 10 minutes	75 minutes	5 windows, outlets in ceil- ing, and 3 Tobin's tubes open. Fans not working	11.7	28	No increase
40	St. Andrew's	No. 1 804 sq. ft.	77	May 11th, 9-55 a.m. In front of scholars	55	Clean	Reading and Writing 10 minutes	55 minutes	All windows and outlets in ceiling open	10.4	100	Large increase
41	Mill Hill Council, Boys'	No. 3 387 sq. ft.	24	May 11th, 10-20 a.m. In front of scholars	60	Clean	Writing 10 minutes	80 minutes	All windows and outlets in ceiling open	16.1	70	No increase

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of plate	(11) Amount of Floor space in sq. ft. for each scholar present	(12) Number of colonic germs growing at blood heat, 37° C.	
											In 24 hours	In 40 hours
42	Mill Hill, Norfolk St.	No. 5 492 sq. ft.	21	May 11th, 10-35 a.m. In front of scholars	58	Clean	Writing 10 minutes	95 minutes	3 windows and other ventila- tion openings open	23.4	3	No increase
43	Emmanuel	No. 10 503 sq. ft.	73	May 11th, 10-55 a.m. In front of scholars	58	Fairly Clean	Writing 10 minutes	115 minutes	3 widows and other ventila- tion openings open Fire burning	6.9	12	No increase
44	Bank Top	No. 8 798 sq. ft.	52	May 11th, 11-25 a.m. In front of scholars	52	Fairly Clean	Writing 10 minutes	10 minutes	2 windows and outlets in ceiling open	15.3	50	Slight increase
45	Wensley Fold	No. 3 405 sq. ft.	42	May 11th, 11-45 a.m. Amongst scholars	57	Clean	Writing 10 minutes	45 minutes	3 windows and other inlets and outlets open	9.6	170	Large increase
46	St. Patrick's	No. 15 1337 sq. ft.	35	May 11th, 2-15 p.m. Amongst scholars	55	Clean	Reading and Writing 10 minutes	45 minutes	1 window and outlet in ceiling open	33.2	26	Slight increase

BACTERIOLOGICAL EXAMINATION OF AIR.— Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Index Number	Name of School	No. of Room on Plan and Floor Area in square feet	No. of Scholars present	Date, Time and Position of Plate	Temperature of Room in degrees Fahrenheit	Condition of Floor	Kind of work going on in the room and length of exposure of plate	Length of time the Scholars had been in the Room	State of the ventilation openings at time of exposure of Plate	Amount of floor space in sq. ft. for each scholar present	Number of colonies growing at blood heat—37° C. — In 24 hours — In 40 hours
47	St. Michael's, Union Buildings	No. 2 1564 sq. ft.	103	May 11th, 2-35 p.m. In front of scholars	61	Clean	Writing and Painting 10 minutes	65 minutes	1 window and outlets in ceiling open	15.1	4 Very large increase
48	St. Alban's Boys' Higher Grade	No. 12 335 sq. ft.	25	May 11th, 2-25 p.m. Amongst scholars	62	Clean	Writing 10 minutes	40 minutes	All windows closed, 1 Tobin's tube open	13.4	16 Very large increase
49	St. Stephen's	No. 5 1412 sq. ft.	98	May 11th, 3-25 p.m. Amongst scholars	55	Clean	Reading 10 minutes	25 minutes	4 windows and outlets in ceiling open	14.4	20 Slight increase
50	Cedar Street	No. 5 323 sq. ft.	37	May 11th, 3-45 p.m. In front of scholars	66	Clean	Reading 10 minutes	15 minutes	1 window, 1 Tobin's tube, 1 window sill inlet, and 1 outlet in ceiling open	8.7	7 No increase
51	St. Gabriel's	No. 5 1350 sq. ft.	84	May 11th, 4-12 p.m. In front of scholars	70	Clean	Writing 10 minutes	57 minutes	8 windows, 2 outlets in ceiling, 4 Tobin's tubes, 2 window sill inlets open	16.0	No colonies This plate was sterile

(1) Index Number	(2) Name of School	(3) No. of Room on Plan and Floor Area in square feet	(4) No. of Scholars present	(5) Date, Time, and Position of Plate	(6) Temperature of Room in degrees Fahrenheit	(7) Condi- tion of Floor	(8) Kind of work going on in the room and length of exposure of Plate	(9) Length of time the Scholars had been in the Room	(10) State of the ventilation openings at time of exposure of Plate	(11) Amount of floor space in sq. ft. for each scholar present	(12) Number of colonies growing at blood heat 37° C.	
											In 24 hours	In 40 hours
52	Four Lanes End	No. 3 480 sq. ft.	37	May 12th, 2-15 p.m. In front of scholars	62	Clean	Reading 10 minutes	15 minutes	2 windows open	12.9	10	No increase
53	St James', Shear Brow	No. 1 371 sq. ft.	32	May 12th, 2-33 p.m. Amongst scholars	67	Clean	Sewing 10 minutes	48 minutes	2 windows open, door opened several times	11.6	53	No increase
54	Parish Higher Grade Girls'	No. 11 330 sq. ft.	29	May 12th, 3-5 p.m. Amongst scholars	62	Clean	Writing 10 minutes	80 minutes	1 Tobin's tube, 1 outlet in ceiling open, door open	11.4	21	No increase
55	Emmanuel	No. 14 320 sq. ft.	45	May 12th, 3-50 p.m. Amongst scholars	63	Fairly Clean	Writing 10 minutes	50 minutes	2 windows, 1 Tobin's tube, and outlet in ceiling open, door open	7.1	150	Large increase
56	Mayson Street Industrial School	No. 2 369 sq. ft.	16	May 12th, 4-20 p.m. In front of scholars	—	Very Clean	10 minutes	Scholars dismissed after plate had been exposed five minutes and 35 minutes	All windows and outlets in ceiling open	23.0	10	No increase

Conclusions.

Owing to the large number of micro-organisms in the air, and to the large number of causes (many of them imperceptible) which cause them to lodge on the plates and favour their growth it is not easy to draw definite conclusions from the foregoing investigations.

I.—Floorspace.

Where there was a very large floor space per head for the scholars present, for example, at Griffin Girls' and St. Joseph's Girls' Schools, which had 109.5 and 182.3 sq. ft. of floor area per head respectively a small number of colonies grew on the plates, viz., 7 and 12 colonies. On the other hand 150 colonies grew on the plate exposed in No. 14 room at Emmanuel School, where the scholars present had a floor area of 7.1 sq. ft. per head.

Also at Wensley Fold School, where the scholars had a floor space of 9.6 per head, 170 colonies had grown in 24 hours.

In these two last cases there was a large increase of the colonies after incubation for 40 hours.

In other instances, however, there was an opposite effect.

II.—Movements of the Scholars.

As at St. Bartholomew's School, where they came into the room from play during exposure of the plate (215 colonies in 24 hours, and a large increase in 40 hours), appeared to cause a larger number of colonies to grow on the plate.

This also occurred in the gelatine plates which were exposed at St. Anne's School.

III.—Window Ventilation.

In several instances where all the windows in the room were open when the plates were exposed, the number of colonies was small, as at St. John's infants' (5 colonies), and Princes Street (2 colonies).

IV.—Other Factors.

No conclusions can be drawn from the temperature of the room, the condition of the floor, or the length of time the scholars had been in the room since the opening of the school, or since the last play-time.

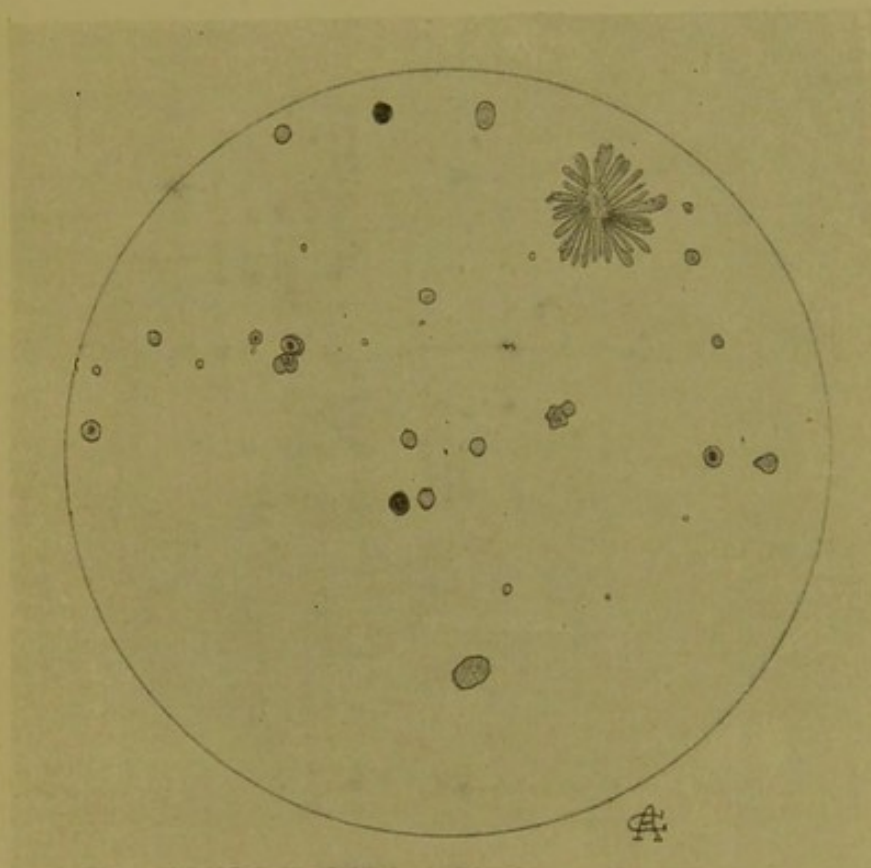


Plate I.

Showing colonies on Agar Plate from the air of No. 11
Room at the Parish Higher Grade School.



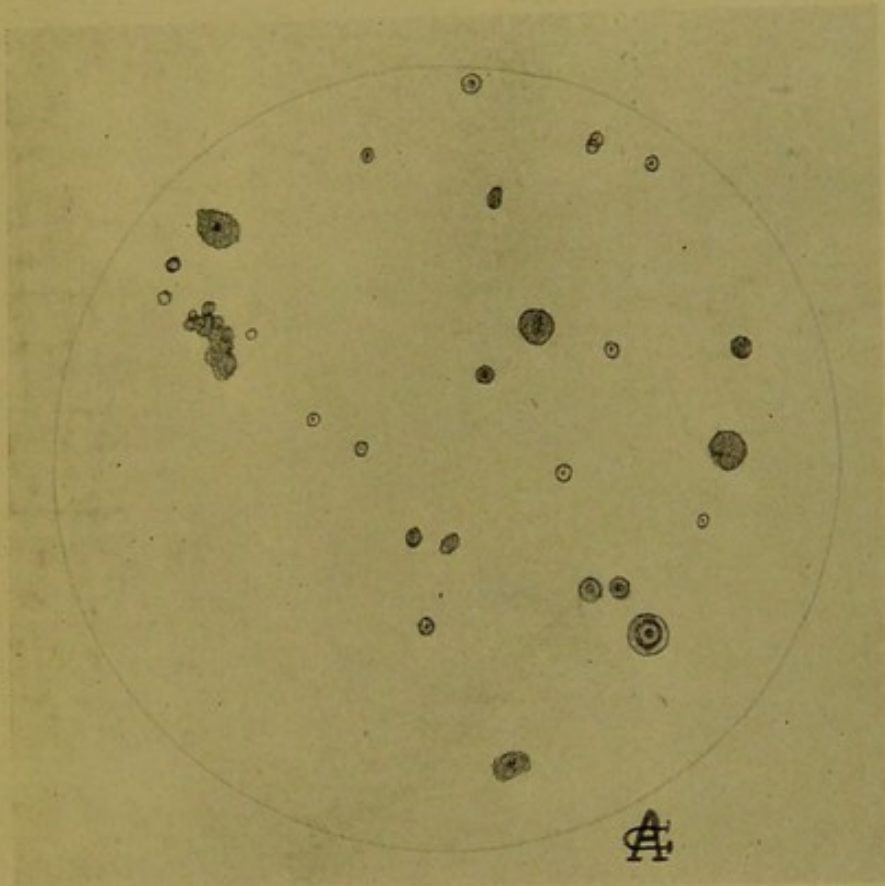


Plate II.

Showing colonies on Agar Plate from the air of No. 3 Room at Mill Hill School, Norfolk Street. The darker colonies were yellow in colour, and the remainder yellowish-white and white.



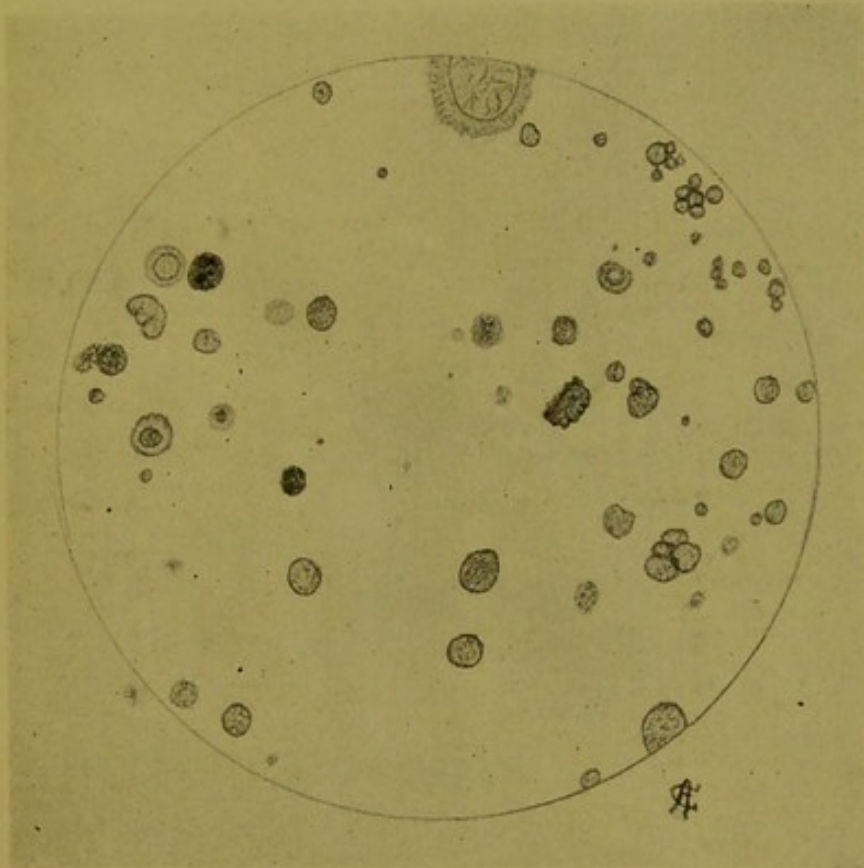


Plate III.

Showing a larger number of colonies on Agar Plate from
the air of St. Patrick's School.



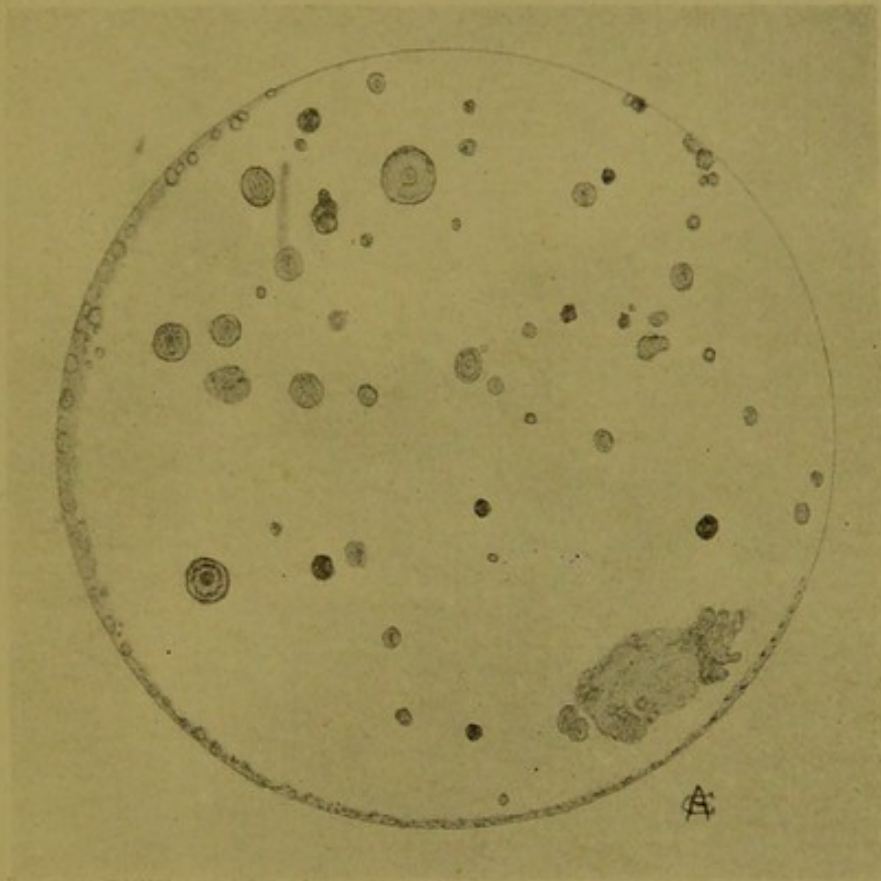


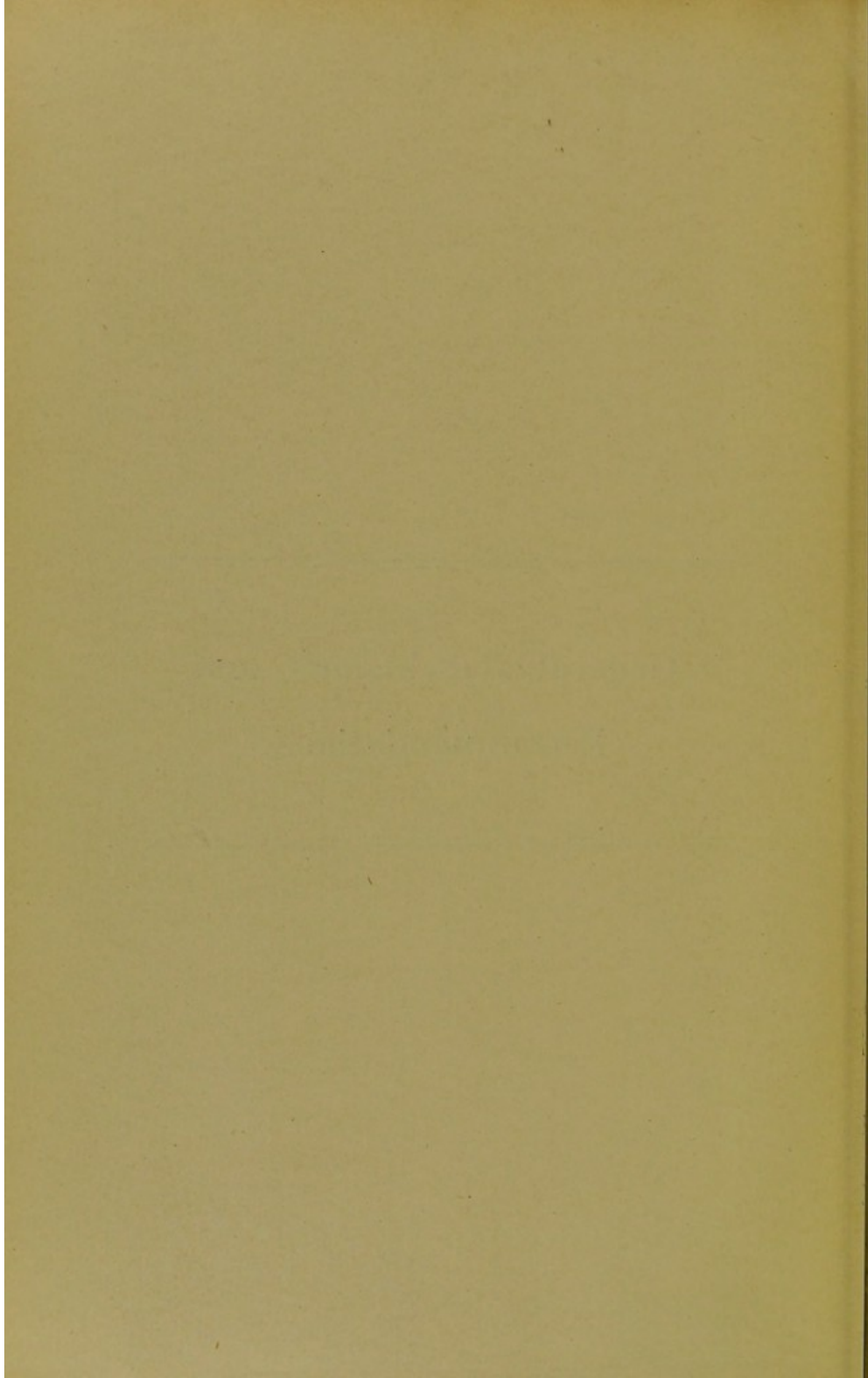
Plate IV.

Showing a very large number of colonies on Agar Plate
from the air of No. 1 room at St. Andrew's School.

Note the collection of colonies at one edge of the plate.



**General Conclusions and
Recommendations.**



CHAPTER V.

The following recommendations apply to all schools where such have not already been carried out, and should be considered together with the other recommendations which have been made at the end of the description of each school, in Chapter II.

If it is not possible to carry all these out at once, the more important ones should be considered first.

1. — Playgrounds.

Those playgrounds which are unflagged should be flagged or asphalted. This is more necessary in districts such as Blackburn, which have a high rainfall, and would assist in greater cleanliness of school floors. The statement that children receive more serious falls on playgrounds with a hard, impervious surface does not agree with my experience.

2. — Covered Playgrounds.

Where possible, one portion of a playground should be under cover, so that many of the children can play outside in wet weather. Where playgrounds are sufficiently large this can be carried out easily, as at St. Anne's School.

3.—Urinals.

The flushing of urinals is often carried out by hand, and is frequently neglected. It would be an advantage if these could be flushed automatically in connection with the flushing cisterns of the sanitary conveniences. They should be brushed out with a stiff broom each day.

4.—Dry Refuse.

Attention should be paid to the storage of dry refuse under sanitary conditions. The dry refuse should be stored in a non-porous dust-bin, such as galvanised iron, well covered, and portable.

5.—Sanitary Conveniences.

I am of opinion that the best form of sanitary conveniences for schools is the type of earthenware trough and pedestal combined, such as that fixed recently at Whalley Range School. All conveniences should be flushed at least two or three times a day.

6.—Cleanliness.

Generally speaking, caretakers should be more energetic in cleansing sanitary conveniences, urinals, gullies, etc. I have seen very many instances of neglect in this respect.

It is very important that the possibilities of the dangers from breathing dusty air should be fully realized. A certain amount of *daily* cleansing is required in each class-room. As soon as the scholars have gone home each afternoon, the windows and doors should be opened. The floors should then be sprinkled with wet sawdust, which has been soaked in water for 24 hours. This is done in most of the Blackburn schools, but I have frequently noticed that the sawdust used has not been sufficiently wet. If the sawdust is not wet, less dust will be caught in the sweeping. After the floors have been well sprinkled, they should be swept, and the sweepings burnt.

The windows should still be left open after the sweeping. The mistake is commonly made of shutting the windows as soon as the sweeping is completed, and the dust not caught in the sawdust merely settles on the floors and desks again. After this the desks, window-sills, etc., should be wiped over with a damp cloth.

A weekly cleansing should be carried out in greater detail, attention being paid to the wood work and windows. The importance of clean windows in assisting the natural lighting has already been mentioned.

7.—Floors.

A special remark has been made where floors are out of repair. The majority of school floors at the times of my visits were fairly clean. Still I am of opinion that arrangements should be made to scrub each school floor once a month.

This would ensure a more frequent wet cleansing which is so important. Sweeping with wet sawdust, or sprinkling, is useful, but it is not so effective as scrubbing, in destroying the germs which abound in the dust.

I would, therefore, recommend this extra scrubbing not only from the point of view of greater cleanliness to the naked eye, but also from the point of view of greater bacteriological cleanliness.

8.—Heating.

It is very important that the heating of the rooms should be sufficient, and yet not excessive. As described previously this question is intimately associated with that of ventilation.

9.—Temperature.

A thermometer should be hung in each room, and the temperature recorded daily by the Head Teacher in a book which could be inspected periodically by the Medical Officer. The temperature charts such as are kept at the Public Higher Grade School, in Montague Street, are most useful, and this example might be followed more generally.

10.—Walls.

Walls internally can be more readily cleansed when they are cemented. They should be coloured or painted green or grey, as these colours fatigue the eyes least. The practice of covering walls with maps and pictures, should not be encouraged, as these harbour dust and cannot be cleansed as often as necessary.

11.—Lighting.

Rooms in which the total lighting area is less than one-sixth of the floor area, and which are dark, should be provided with more natural lighting, and plain transparent glass should be used. Coloured glass should not be allowed in schools. Windows should be kept clean. Incandescent light is preferable to the naked gas jets, and electric light does not vitiate the air as much as either.

12.—Accommodation.

It is worthy of consideration whether or not a card should be placed in each room stating the maximum number of scholars which should occupy that room at one time. This would tend to prevent any overcrowding. Also the practice of crowding together the children at one end of a class-room should be prohibited.

13.—Ventilation.

The Head Teacher of each department should be made responsible for the best and intelligent use being made of the available means of ventilation in the rooms under his or her charge. Where inlet or outlet ventilation openings are below the standard recommended by the Board of Education, they should be made satisfactory. A great disproportion between size of inlet and size of outlet frequently occurs, and may cause a draught.

Hinge windows should be provided with side shields, to prevent draught, where necessary.

All windows should be widely opened during each play-time, and it is also well worthy of your consideration whether or not you would direct two playtimes during each morning. This would simplify

considerably the question of ventilation, even if it caused a slight loss of time in passing in and out twice, and the two play-times together need not exceed the length of the present play-time. This would give an opportunity for every room to be flushed by open windows twice during each morning. I would recommend you to give this a trial in one or two schools first.

It is very important to clean out Tobin's tubes and Sherringham valves periodically. Too often one sees them filled with dust which not only prevents them from acting efficiently, but also causes the air of the room to be charged with this dust.

It is also important to keep revolving ventilators well oiled.

The openings for ventilation, other than doors and windows, have been described as permanent ventilation openings, and the necessity for these permanent openings is not so great in those rooms where there is good cross ventilation, and where sufficient hopper windows are placed suitably, as in other rooms where cross ventilation by the windows is impossible. As stated previously, this implies intelligent action on the teacher's part. Each school should be considered on its merits, due regard being paid to cross-ventilation, openness of site, etc.

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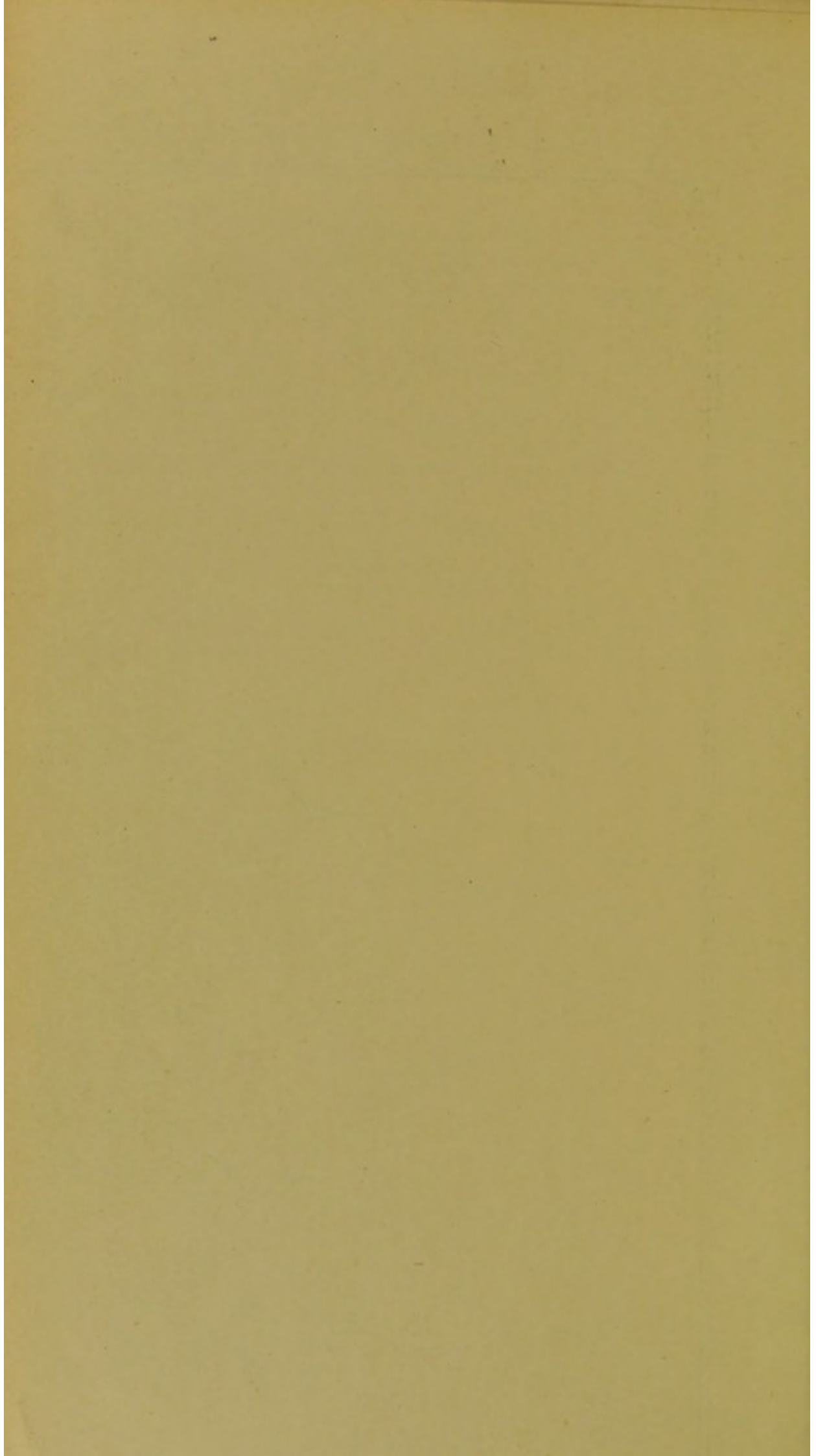
REFERENCE

- | | | | |
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| 1. St Gabriels C.E. | 15 Public H.G. St George's | 29 Maudsley St | 43 Christ Church (Redcliffe St) |
| 2 Four Lane Ends (Council) | 16 St Albans Lark Hill R.C. | 30 St Josephs R.C. | 44 St Peters R.C. |
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| 4 St James C.E. | 18 Holy Trinity | 32 St Peters | 46 Mill Hill C.E. |
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| 7 St Michael's | 21 Furthergate | 35 Bank Top | 49 St Bartholomews |
| 8 Whalley New Road Girls H.G. | 22 St Barnabas | 36 St Marys R.C. | 50 St James' (duide) |
| 9 Moss St | 23 St Thomas | 37 St Lukes | 51 St James' (Blackmoor) |
| 10 Sacred Heart R.C. | 24 Accrington Road | 38 Park Road | 52 Lower Darwen (Council) |
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| 14 Public Higher Grade (Montague St) | 28 St Matthews | 42 Christ Church (Mosley St) | |

Note - H.G. signifies Higher Grade
 R.C. - Roman Catholic.



Map Shewing Schools.



11.4.29



