

The St. James' Road proposal did not receive the support of the present Government, which came into power in October, 1899. It was eventually decided to send it back to the newly-appointed Public Works Committee for reconsideration. At the same time, another proposal, to adopt the Benevolent Asylum site for the terminus, was also submitted for inquiry. The decision of the previous Committee was reversed, the St. James' Road proposal was rejected and the Benevolent Asylum site recommended for adoption. This last proposal was submitted to the Legislature by means of a Bill which was passed and became law on 11th December, 1900, so that the question of the site for the "Central Station" was at last settled for all time.

This burning question of long standing having been thus decided, the next step was to set to work on the plans of the station, and adapt the accommodation to the site which Parliament had approved. The station arrangements of the St. James' Road project were taken for a guide, but of course they had to be modified to suit the altered position and the relative levels of roads and rails.

As the terminus is very little nearer the city than the existing station, passengers would have to be provided with means for getting in and out of the city, thus the tramway traffic has to be specially dealt with, and as there would be a greater concentration of railway officers in the building, a considerable increase in the office accommodation had to be provided.

After the subject had been very fully investigated and the method of running the tramway up by means of a ramp on to the station level had been adopted, the Hon. Minister for Works, Mr. E. W. O'Sullivan, taking the view that in the multitude of counsellors there is safety, appointed in October, 1901, a Board consisting of Messrs. H. C. Stanley, Chief Engineer, Queensland; C. W. Norman, Chief Engineer, Existing Lines, Melbourne; W. L. Vernon, Government Architect; T. R. Firth, Chief Engineer, Existing Lines, Sydney, and myself to consider the question of requirements and design. The Board got to work and, after thoroughly going into the question, adopted the design in all its main features, but recommended certain improvements. Besides certain details which were dealt with too, the accommodation provided for the public was increased and the architectural features of the building inside and outside received special attention. Such modifications which have since been submitted to and have received the approval of the Government cannot be carried out without materially adding to the cost. The Cabinet also decided, on the recommendation of the Minister, to make additional resumptions of property, so that eventually the surroundings of the station could be brought into accord with the imposing character of the design of the buildings.

It must be borne in mind, when considering the cost of the building and other works, that the new design includes the erection of a number of shops, which should return a revenue of at least £2,000 per annum, and thus an additional expenditure of £67,000 becomes commercially allowable. There is also included in the resumptions a considerable area converted from the cemetery and from Railway Place which will be of immense value to the Railway Commissioners either

as an extension of the Goods Yard, as affording room for carriage storage sidings, or for other purposes; and there is a valuable area of surplus land between Elizabeth Street and the new street on the east of the station, which may be looked upon as an important asset. It is also to be observed that the Railway Ambulance has been provided with shelter, and the Postal Authorities will be accommodated with a large space in which the business of the receiving and transmission of mails can be conducted.

The following is a description of the Central Railway Station and the road approaches thereto:—

On the north front of the Station, the roadway has a total width, including footpaths, of 165 feet, so that not only the wheel traffic to the station, the tramway traffic to and from the City and Western Suburbs, and the sports traffic, but also the heavy traffic diverted from Devonshire Street may be commodiously accommodated. This street will be continued to George Street and made 100 feet wide.

Steps are being taken to widen Pitt Street and make it 100 feet.

Hay Street and Elizabeth Street, where skirting the park, have been widened by the abolition of the pathway running alongside the park and the utilisation of the Avenue in the park for the purpose. A new street, 100 feet wide on the East side of the station ground, connects Elizabeth Street at the junction of Foveaux Street and Castlereagh Street, Redfern.

An inclined approach including a width of forty feet for cabs, twenty feet for pedestriains, and a sufficient width for the tramway, runs parallel to Pitt Street, between Hay Street and the station. The return tramway descent on a grade of one in twenty-four is made on the east side of the station. These inclined approaches will have flat earthware slopes towards the park which will be ornamentally planted.

At the southern end of the station, Devonshire Street, where it passes through or skirts the railway property, will be closed to all but pedestrian traffic, the latter being accommodated by a subway.

With regard to the Tramways, the Castlereagh and Pitt Street lines will be brought up by inclines to the platform level of the station, as already stated.

The tramway running through Belmore Park has now been abolished and deviated *via* Elizabeth Street and the road in front of the station. Trams to Waterloo, Botany, and Elizabeth Street, Redfern, will be taken along Elizabeth Street and the new street on the east side of the station grounds.

From the north or City end, access to the station for pedestrians will be by a footpath twenty feet wide, starting from Hay Street and rising up with a one in sixteen grade to the colonnade in front of the main building.

From the west, access will be obtained by a passenger subway fifteen feet wide opposite the new street, between George and Pitt Streets, with a one in twelve grade to the platform level.

A striking peculiarity and advantage in the arrangements of this station is that there are separate approaches for pedestrians, road traffic and tramways, so that there will be none of the clashing and danger incident on the present arrangement between George Street and the existing station.

GENERAL DESIGN OF STATION.

A great amount of attention has been devoted to the treatment of the front and west sides, and there is an addition of a wing on the east side.

The tower, which will be situated near the north-west corner of the station, will be a commanding feature. It will be 250 feet high from the ground level, and will be provided with a clock which will be visible from most parts of the city.

It is expected that the whole will produce an imposing architectural effect. The space enclosed between the wings of the building, and which is covered by the main roof, includes the assembly platform, seventy-two feet wide, five docks with three roads each, and intervening platforms.

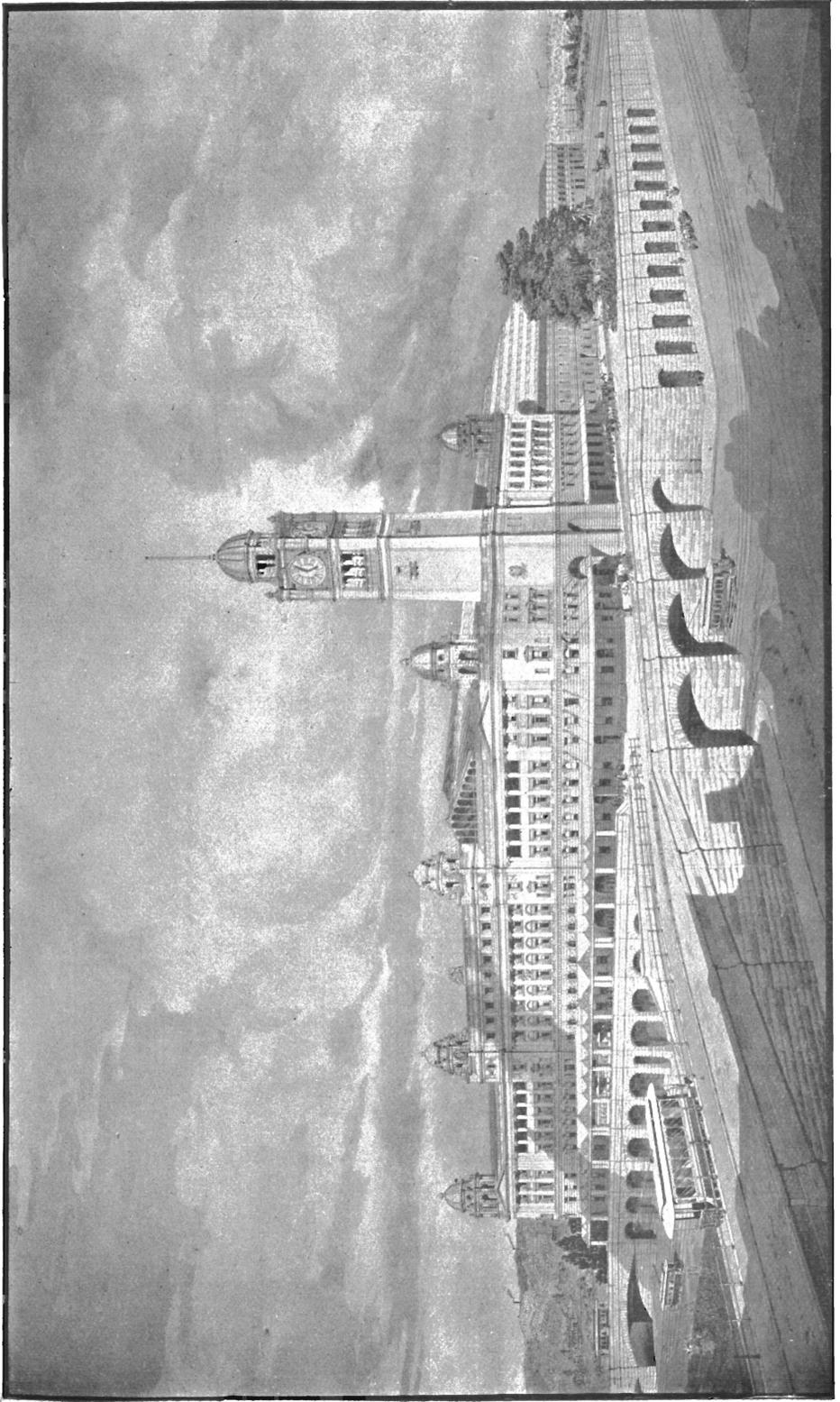
Outside the building, on the east side, some lines will be laid which can eventually be extended into the city, should that work be authorised by Parliament.

It is intended that the accommodation for the public shall be specially commodious. It will be of such a character that it will not only be suitable and sufficient for many years to come, but it has been architecturally designed so as to be an object of admiration to visitors.

A special feature of the Central Station design is its assembly platform (or, one might say, assembly platforms) because for the passengers leaving by train there is a wide covered space to the north of the main building, which to a smaller extent serves the same purpose as the larger one, situated between the two wings of the building. This latter is 348 feet long and seventy-two feet wide. Although it has its analogue in space in front of the station at Redfern where arrivals from Sydney congregate, it differs in important respects from that one. Although a busy place, it will not be subject in the same way to the rush of arrivals and departures, and those using it will not only be better protected from the weather, from the hot and cold blasts and the damp that afflict the passengers at Redfern, but they will have better opportunities for considering their whereabouts and looking up the traffic directions than they now enjoy. Before them, in one line, will be the barriers with openings leading on to the different platforms, and indicators plainly marked which can be read from a distance will show them the times and destinations of each departing train.

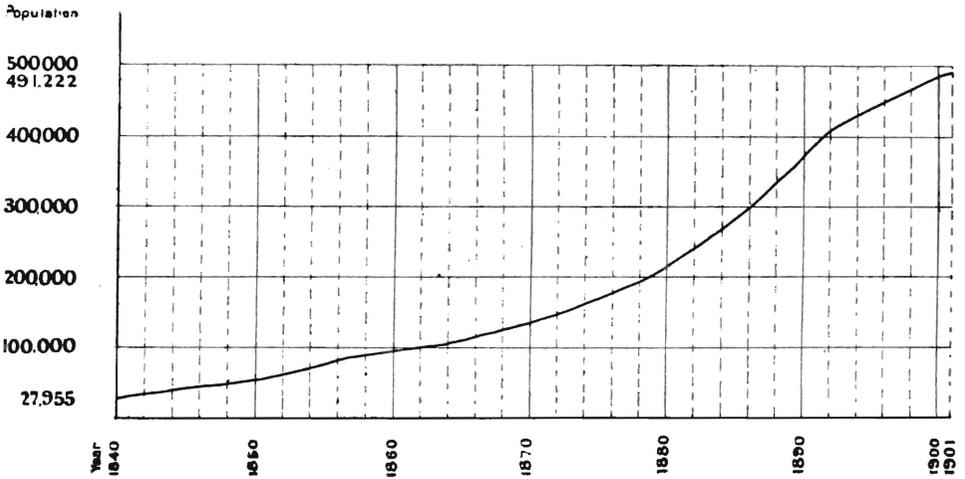
The booking hall will, in accordance with modern practice be of a large size, namely, one hundred and ten feet long by fifty-four feet broad by thirty-six feet high. It is intended that it shall be a work of art, and probably some special display of the latest style in station adornment will there be found.

Waiting rooms will be provided both for ladies and gentlemen, and the best attention will be devoted towards giving those using them the most carefully designed lavatories and conveniences.



THE CENTRAL RAILWAY STATION, SYDNEY, N.S.W.

DIAGRAM SHEWING POPULATION OF SYDNEY & SUBURBS FROM 1840 TO 1901



A barber's shop will be provided, accessible from the assembly platform, and to meet a demand that is often felt by those arriving by train and wishing to get rid of the dust of travelling, and to change their clothes so as to fit them to meet their friends or visit places of entertainment, there will be baths and dressing rooms for use of which recognised and moderate charges will be made.

The refreshment buffet is nearly sixty feet long by a width of forty-one feet, and will be got up in the latest style. Adjoining is the ladies' and gentlemen's dining and tea rooms eighty-six feet by fifty-three, with separate entrances from the assembly platform, the serveries for which are in direct communication with the kitchens in the basement where every adjunct of the latest type is provided.

The public telegraph and telephone offices, fifty feet by twenty-nine feet, with operating rooms, seventeen feet by thirty feet each, are situated in the west wing and are approached from the inside platform, and also from the cab arrival platform on the outside. There is also a telegraph enquiry office on the main assembly platform.

The baggage room, situated at the north-west corner, is seventy-two feet by fifty-eight feet, and is convenient to the cab arrival platform. Two large lifts are provided in which the baggage is taken to the basement to be distributed through the subways and up the lifts to the various platforms.

On the other side of the arched opening to the platform, and next the baggage, is the cloak room, 118 feet by 40 feet, fitted up specially for the ready reception and delivery of parcels. Lifts are provided for the reception and delivery of goods to large stores in the basement.

At the south end of the west wing of the main building is situated the main parcels office, 278 feet by 50 feet, two stories high with basement, the top floor will be used for offices. Here special facilities will be provided for parcels inwards and outwards; there is a separate road, forty feet wide, for inward and outward traffic, with all the necessary raised platforms, &c.

A few words may now be said about luggage-conveying. Some years ago, when the Hyde Park station seemed likely to be carried out, overhead systems of conveying such as Aspinall's were viewed with favour. The only way to get the luggage shifting done clear of the traffic on the platform was by taking it overhead. That it is desirable to get rid of the objectionable luggage-trolley, which is always frightening nervous people and annoying irascible ones when it comes rumbling along the platform, requires no argument to prove, and if anything can be done to get over the difficulty, the comfort of passengers is very much enhanced and the serviceability of the platforms for the purpose for which they are intended much increased. There does not appear to be any very great difficulty in arranging for an overhead system of luggage-conveying, but it is somewhat costly to instal and is certainly rather unsightly.

The overhead system of luggage-carrying is well and successfully developed at Victoria station, Manchester. It is that which goes by the name of Aspinall's, having been invented by a gentleman of that name, the General Manager of the Lancashire and Yorkshire Railway. The motive power is electricity, and the cars, which carry luggage up

to 15 cwt. in weight, are suspended from rails carried overhead. On the top is an electric motor, which performs the office of travelling and lifting and lowering the load; below this is a seat for the man who accompanies and guides its load, and underneath again is the basket for the luggage. As the sharpest curves can be manipulated, the car can be run round whatever corners the rails are laid. The system is said to be economical.

At Woking, a station on the London and South-western Railway, a new system of wire ropes worked by hydraulic power has been introduced with the object of getting luggage from platform to platform without the dangerous experience of crossing the line on foot. This system would not appear to have the same flexibility as Aspinall's.

In the present station, instead of doing the operation overhead, the levels permit of its being carried on underground by means of subways and lifts at suitable points. The position of the subways and platform lifts are shown on the plans, and the facility with which luggage can be transferred must be apparent.

The mails, for which special accommodation has been provided in the south-west wing, will be taken to and delivered from the vans in a special subway.

It has been arranged to give the Post Office accommodation for transfer of mails, and the Railway Ambulance will be also accommodated.

Under the cab approach and departure roads, and facing Pitt-street there will be twenty-two shops, averaging seventeen feet wide by forty feet deep, and fourteen feet high, with colonnade in front eight feet wide. They will be fitted up suitably for occupation as shops, and should bring in a handsome rental. There will also be nine similar shops in the basement of the main building facing the new street.

The total frontage given up to shops is thus 671 feet, the total number of shops is thirty-one.

On the upper floors of the building the Railway Commissioners and their officers will be accommodated.

For the convenience and comfort of the staff, who are thus situated some distance from the centre of the town, a special dining-room and reading-room have been provided on the street level with access by lift and staircase from the offices above.

It goes without saying that the building will be provided with lifts or elevators at different points as well as staircases. As to the motive power to be adopted, that is a matter which remains for discussion. The choice lies between hydraulic and electric power, and it will, probably, be found that if the Railway Commissioners are in a position to supply electric currents at a cheap rate the other system will not be in a position to successfully compete.

There is one important particular in which our Sydney station differs from most of the terminal stations in the old country, and that is the absence of a cabstand under the main roof to meet the arrival trains. It has been usual to include such a provision, and it will be remembered that in the Park-street, St. James's-road and original Benevolent Asylum plan such a cab road was shown. The matter was

one of very serious consideration by the Station Advisory Board and by the Railway Commissioners, and it was eventually decided that, owing to the exceptional facilities given to passengers and the handling of their luggage, the orthodox cab-road was not so great a necessity, and moreover, that being the case, it was considered desirable that the building should be kept entirely free from the smell, which the standing of horses under the roof must certainly involve.

Roof.

It used to be thought that great advantage would be derived from having a station roof in one span without intermediate supports. It certainly makes it easier to lay out your station where it is not possible to arrange everything symmetrically. If the roads and platform can be symmetrically arranged with regard to the centre it does not as much matter, because a line of posts along the middle of a double platform is no detriment. The platform has generally to be divided down the middle, as passengers may be arriving on one side and departing on the other.

Examples of English single-span roofs are as follows:—Charing Cross, 170 feet; Cannon Street station, 187 feet; St. Pancras, 240 feet. The latter was built to a bold and novel design and was the widest clear-span roof for a long time. The Jersey city terminus in America has a slightly larger span, namely 256 feet; but the Philadelphia Station has a clear span of about 307 feet. This roof was finished about ten years ago.

A very good compromise is effected by placing two lines of intermediate pillars, as in our design, and still avoiding the disadvantages of valleys and throwing off the water to the two sides. The roof has a finer appearance than when cut up into three single roofs with their own ridges and valleys. This method of treatment I first observed in St. Louis, in 1894, but it may have been adopted before that. The same principle is carried out in the Boston roof.

The central station roof, as designed, consists of one central span of 198 feet, and two side spans of seventy-five feet each, giving a total of 348 feet.

I believe that our Sydney roof will present a very fine appearance when finished. It should far surpass the roofs at St. Louis and Boston already mentioned, the curves of the arching and framing will be more elegant. It may not be as cheap, but it will be much more artistic.

The design of the roof has necessitated very close and careful study. There is a good deal of groining in the roof over the Assembly platform, and the calculation of the stresses to which each member is subjected, under varying conditions of temperature and wind pressure are throughout the whole roof very complicated. It is important that there should be left no possible chance of any serious mistake in the calculations, and risk to the public and the public property, were there undue weakness to any part, must be avoided. I therefore considered it expedient, although entirely convinced of the competence of the officers under me, to recommend to the Minister that Professor Warren should be asked to assist in checking the calculations, and this was agreed to. We want for this work, which is a very great and important one the

very best advice, and we cannot do better than follow the example of our friends in the British Isles, who in a case like this are in the habit themselves, for the sake of safety, of getting their designs overhauled or checked by an independent authority. Among such advisers in the old country I may mention Professors Ewing, Kennedy, Barr, and others.

PLATFORMS.

The British practice with regard to platform heights originated that of Australia. It is to put their level 2 feet 9 inches to 3 feet above the rails. Our platforms are 2 feet 9 inches above the rail at the edge, and are higher at the back. This is far the most convenient way, for passengers can enter and leave their car with comfort.

In America and on the Continent it is not so. The platforms are there placed at or a little above the level of the rails. In America it does not matter so much, as all the cars have end platforms, and of course steps can be fixed so as to give fairly easy access.

On the Continent, however, the compartment car is largely and, indeed, chiefly used, and nothing can be more trying to the old and to the weak than to have to clamber up even with assistance from the ground level to the floor of the carriage.

We may now compare the relative platform accommodation in the existing and new Stations.

The existing Station contains the following platforms :—					
A	...	486 feet	No. 6	...	624 feet.
B	...	482 "	7	...	233 "
No. 1 & 2	...	469 "	8	...	405 "
3	...	475 "	9	...	313 "
4	...	173 "	10	...	248 "
5	...	624 "	11	...	383 "
Total			5,384 feet.

Some of these platforms are, however, so short that they are quite useless for general purposes. Mr. Parry, in his evidence before the Public Works Committee on the 15th February, 1900, points out that a seven-car suburban train with engine takes up from 410 to 424 feet, according to type of engine. If we exclude those platforms that are less than this in length, we shall find that the total length is reduced to 3,629 feet.

It is to be noted that the suburban trains sometimes contain eight cars, in which case they could not stand in Platform 8 or Platform 11 without fouling the points, so that these platforms could not be used if wanted for the purpose.

The Melbourne express often requires two locomotives and a length of 560 feet is taken up for its accommodation.

The Mail trains often take up 584 feet, and it will thus be seen that the only platforms which will accommodate these trains are Nos. 5 and 6.

On the other hand, the new station possesses thirteen platforms, each one of which is long enough to take the longest train yet run, and still longer trains might be placed in each dock if the locomotive is allowed to stand clear beyond them, a condition of things which is not allowable in the present station.