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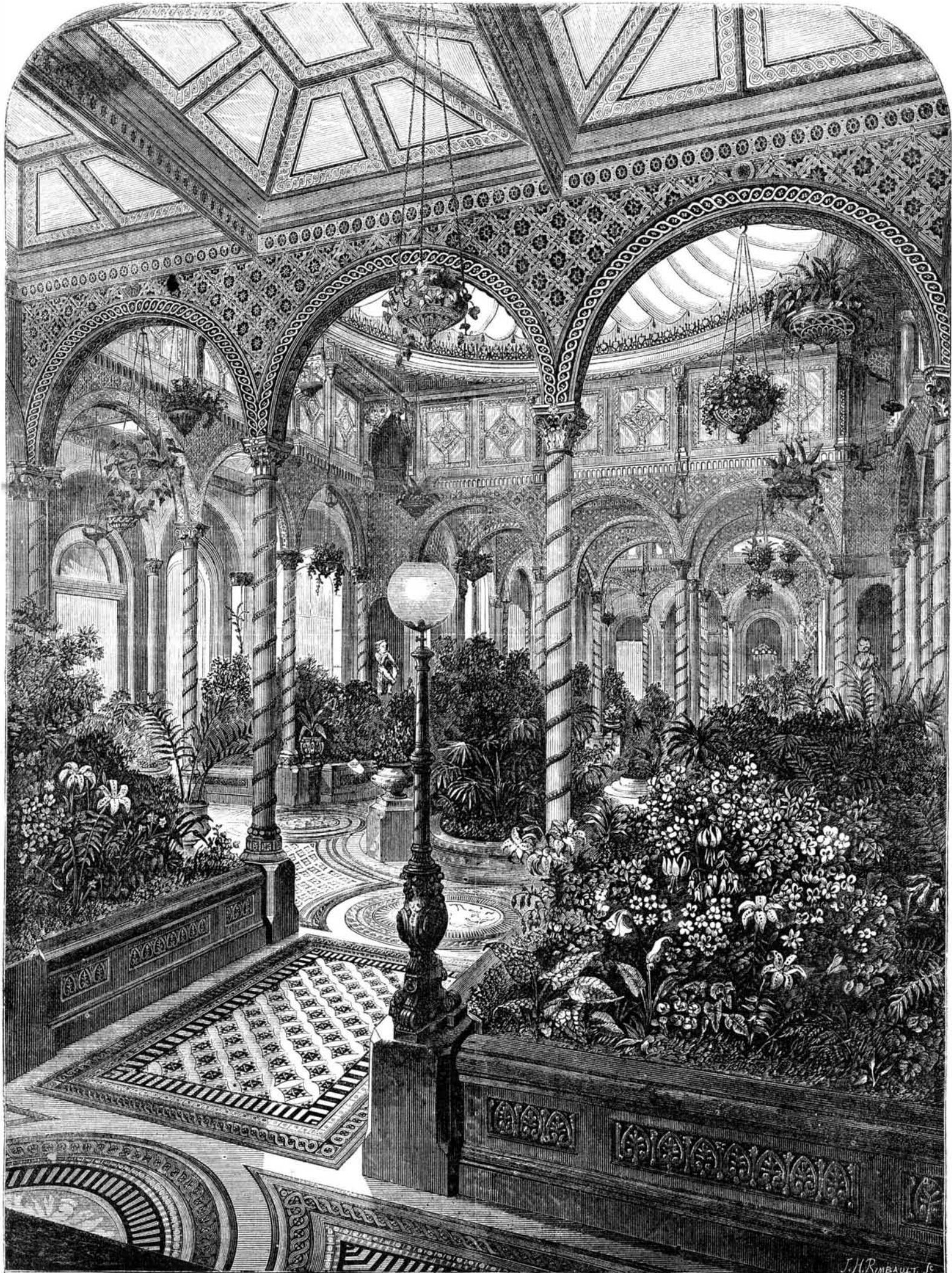
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[IN ADVANCE.]

MR. BESSEMER'S CONSERVATORY.

But few iron structures have been hitherto attempted in which the architectural effect has not been more or less marred by the prominence given to large bolted flanges, tie rods, cross braces, or other like devices, which, however necessary in a structural point of view, certainly do not add to the

beauty of the building, unless it be of the plainest or most utilitarian description. In the design we now lay before our readers, however, there are no signs visible by means of which the whole is put together; not one flange, tie, or bolt of any description being shown in the whole of the building, externally or internally. The castings have all been executed with a degree of care and beauty of finish rarely seen

in any large work, and Messrs. Andrew Handyside, of Derby and London, have most fully sustained their high character as founders, in the execution of the work intrusted to them. The original plan, we understand, was made by Mr. Bessemer, and the details worked out under the able superintendence of Messrs. Banks and Barry. Many of the perforated castings employed in this structure, are of extreme beauty



BESSEMER'S CONSERVATORY. ENGLAND.

and delicacy of finish. Among the heaviest are some from three to four tons in weight each, while there are thousands of others not exceeding four or eight ounces.

The conservatory has two floors or crypts, extending entirely beneath it. The lower one receives a supply of fresh air through a perforated stone screen facing the grounds, and forms the cold air chamber. Above this is a second space of equal area, divided from the lower one by a stone floor. The upper space contains a coil of ten pipes of 4 in. diameter, the coil being about 100 ft. in circumference, and giving over 1000 square feet of heating surface. The ceiling of this upper or hot-air chamber is covered by 5 in. York flags, laid on rolled iron beams. On the upper surface of these flags the tessellated floor of the conservatory is laid. Ten large slide valves (all connected by a rack and pinion) admit cold air from the chamber below at equidistant parts to the surface of the hot water pipes. After passing over and among these pipes, the air enters the conservatory through numerous perforated brass panels, in such quantities as may be desired. Massive brick piers pass through these floors, and support the sixteen columns on which the upper part of the structure rests.

The conservatory is formed with a large square central area surmounted by a dome. On each side of the square there are bays or transepts, the entrance to which is beneath three arches, rising to a height of 14 ft., and resting on columns, of which there are sixteen. The dome is formed of rolled iron ribs, meeting together in the center and united to a large pendant perforated boss; the ribs (40 in number) are separated by extremely light iron ornamental casting, forming a framework which is glazed with stained glass, which encircles the dome in three distinct bands; exterior to this stained glass is a plate-glass covering, each plate being curved to the true shape of the dome; the plates are each 7 ft. long, the joints so arranged as to be rendered invisible behind the stained glass panels; the glass is ground on both sides, and embossed in a bold trellis pattern, giving to the whole a most beautiful effect. The employment of ground glass for the dome gives it an apparent solidity when viewed externally from the terrace that surrounds the building, which much increases its architectural beauty. The dome, which is 40 ft. in height, rests on a series of bold trusses, springing from the sills of the upper windows, and forming a division between them; these trusses are perforated on all sides, and are highly ornamented. The ceiling of the central part surrounding the dome is formed into deep soffits, each filled with elaborately designed perforated gilt panels, with an azure background formed by the flat iron roof above them. In the upper part of the central space there are six windows on each side, each one composed of a single sheet of ground plate glass, engraved and painted in pale tints. These windows all open by an ingenious contrivance worked by an attendant from the cold-air chamber below, which is sufficiently lefty to admit of ready access.

The iron columns have a spiral groove running around them, in which small spheres are fitted, by stringing them on a copper wire, giving an effect which simple casting could never accomplish; these spheres are all gilt, and give to the fresh gray tint of the columns a great relief; the capitals are all built up with separate acanthus leaves of very light and elegant form, and are also gilt. The arches, which rest on these columns, are all double castings, placed back to back, and are most exquisitely molded in a perforated pattern, through which the light falls in ever varying clusters of rays as one walks about the conservatory. There are thousands of rosettes on these perforated screens, all cast separately, and screwed in place, so as to get a bold relief, well undercut, an effect which founding in mass could not have.

The external walls are pierced with large circular-headed windows, glazed with a single sheet of plate glass, with a small Greek border etched around the edge, and narrow margins of colored ground glass of a soft gray tint etched in patterns. The walls are entirely incased with polished marble in pieces so large as to show no joints. A richly-molded architrave of red Devonshire marble surrounds each window and door, and relieves by its warm color the spaces between the windows, which are of dark Bardillo marble, against which are placed three-quarter columns of white veined Sicilian marble. The shafts of all twenty-four columns and the angle pilasters are 10 ft. in length, each in a single piece, and surmounted by capitals carved in white Carrara marble. Above these is a rich entablature of veined Sicilian marble running over the Bardillo, which is ornamented over each window and door, with a rich incised pattern of arabesque scroll work gilt in all the sunk part. The whole of the marble work was executed by Mr. Hartley, of Pimlico. One bay or transept forms the end of the adjoining drawing room, having two glass doors and a window between looking into it. It is from this window that the view was photographed which we have engraved. The right-hand bay abuts on a billiard room, having a central door and two large windows looking into it; and opposite to this are two similar windows, and a central door leading on to a raised terrace, 90 ft. in length, paved with squares of black and white marble, and extending all along the garden front of the house. The fourth bay is also divided by three equal arches, in each of which there are mirrors of 14 ft. high by 7 ft. wide, passing down below the floor line, and thus continuing the pattern of the pavement. These mirrors are silvered by a deposit of pure silver, and are not easily injured like those coated with tin-foil and mercury. They are kept warm at the back by a hot-air chamber, which prevents any deposition of moisture on them; they thus, at all times, reflect clearly the whole interior of the building, giving it apparently double its real size. Around the sides of the building are raised spaces for the flowers, having a sort of dwarf screen of polished dove-

colored marble, in which are numerous gilt brass panels for the supply of warm air from the chamber below. In the central space beneath the dome is a large basin, richly molded in beautiful veined Bardillo marble, with four pedestals of the same material at the angles, which serve to support vases of white marble, containing some beautiful specimen plants. The basin is filled with rare exotic ferns, and has a fan palm in the center. Eight similar marble pedestals are also formed in the dove marble screen before named, on which are some choice specimens of Majolica vases by Minton, and two from Sèvres, and containing rare plants. Pendant from the ceiling are six Majolica flower baskets containing choice ferns and other drooping foliage. There are also eight suspended Roman lamps in bronze, with lotus leaves forming clusters of flowers in gas jets, and also four other suspended Roman lamps of classical design, giving in all eighty gas burners, by means of which the whole building may at night be brilliantly illuminated; there are also near the drawing room door a pair of exquisitely chased bronzed candelabra, which on ordinary occasions give sufficient light for walking in the evening. The floor is composed of encaustic tiles and tessera tastefully arranged in panels of quiet colors (so as not to interfere with the brilliant colors of the flowers). In this design are embodied mosaics representing Spring, Autumn, Summer, and Winter, and a fifth near the entrance represents Old Time with the date of the erection of the building on a table beneath him; this beautiful floor was erected from designs prepared by Messrs. Simpson, the London agents for Maw's encaustic tiles; at each of the four angles of the central part are life-size figures of boys executed in biscuit china at Sèvres, they represent Love, Pleasure, Folly, and Repose; they are exquisitely modeled, and of a pure white, standing against the rich crimson background of the niche, and supported by pedestals of Devonshire marble.

At six different parts there are semicircular spaces left above the doors or windows, and these are filled by spirited groups of chubby children in alto relievo, modeled by Wynn, and executed in copper bronze by Messrs. Elkington. It is only fair to add that much of the richness of effect and real beauty of the whole is due to the excellent taste of the decorator, Mr. Schmidt, who has managed to give a rich glow of effective color and gilding, without in any way lessening the natural beauty of the flowers and foliage.—*Engineering.*

BELLS AND BELL TOWERS.

[From the Contemporary Review.]

The long, winding staircase seems to have no end. Two hundred steps are already below us. The higher we go the more broken and rugged are the stairs. Suddenly it grows very dark, and clutching the rope more firmly we struggle upwards. Light dawns again, through a narrow Gothic slit in the tower—let us pause and look out for a moment. The glare is blinding, but from the deep, cool recess a wonderful spectacle unfolds itself. We are almost on a level with the roof of a noble cathedral. We have come close upon a fearful dragon. He seems to spring straight out of the wall. We have often seen his lean, gaunt form from below—he passed almost unnoticed with a hundred brother gurgoyles—but now we are so close to him our feelings are different; we seem like intruders in his lawful domains. His face is horribly grotesque and earnest. His proportions, which seemed so diminutive in the distance, are really colossal—but here everything is colossal. This huge scroll, this clump of stone cannon-balls, are, in fact, the little vine tendrils and grapes that look so frail and delicately carved from below. Amongst the petals of yonder mighty rose a couple of pigeons are busy building their nest; seeds of grasses and wild flowers have been blown up, and here and there a tiny garden has been laid out by the capricious winds on certain wide stone hemlock leaves; the fringe of yonder cornice is a waste of lilies. As we try to realize detail after detail the heart is almost pained by the excessive beauty of all this petrified bloom, stretching away over flying buttresses, and breaking out upon column and architrave, and the eye at last turns away weary with wonder.

A few more steps up the dark tower, and we are in a large dim space, illuminated only by the feeblest glimmer. Around us and overhead rise huge timbers, inclining towards each other at every possible angle, and hewn, centuries ago, from the neighboring forests, which have long since disappeared. They support the roof of the building. Just glancing through a trap-door at our feet we seem to look some miles down into another world. A few foreshortened, but moving specks, we are told are people on the floor of the cathedral, and a bunch of tiny tubes, about the size of a pan-pipe, really belong to an organ of immense size and power. At this moment a noise like a powerful engine in motion recalls our attention to the tower. The great clock is about to strike, and begins to prepare by winding itself up five minutes before the hour. Groping amongst the wilderness of cross beams and timbers, we reach another staircase, which leads to a vast square but lofty fabric, filled with the same mighty scaffolding. Are not these most dull and dreary solitudes—the dust of ages lies everywhere around us, and the place which now receives the print of our feet has, perhaps, not been touched for five hundred years? And yet these ancient towers and the inner heights and recesses of these old roofs and belfries soon acquire a strong hold over the few who care to explore them. Lonely and deserted as they may appear, there are hardly five minutes of the day or night up there that do not see strange sights or hear strange sounds. As the eye gets accustomed to the twilight, we may watch the large bats flit by. Every now and then a poor lost bird darts about, screaming wildly like a soul in purgatory that

cannot find its way out. Then we may come upon an ancient rat, who seems as much at home there as if he had taken a lease of the roof for ninety-nine years. We have been assured by the carillonneur at Louvain that both rats and mice are not uncommon at such considerable elevations.

Overhead hang the huge bells, several of which are devoted to the clock—others are rung by hand from below, while somewhere near, beside the clock machinery, there will be a room fitted up, like a vast musical box, containing a barrel, which acts upon thirty or forty of the bells up in the tower, and plays tunes every hour of the day and night. You cannot pass many minutes in such a place without the clicking of machinery, and the chiming of some bell—even the quarters are divided by two or three notes, or half-quarter bells. Double the number are rung for the quarter, four times as many for the half-hour, while at the hour, a storm of music breaks from such towers as Mechlin and Antwerp, and continues for three or four minutes to float for miles over the surrounding country.

The bells, with their elaborate and complicated striking apparatus, are the life of these old towers—a life that goes on from century to century, undisturbed by many a convulsion in the streets below. These patriarchs, in their tower, hold constant converse with man, but they are not of him; they call him to his duties, they vibrate to his woes and joys, his perils and victories, but they are at once sympathetic and passionless; chiming at his will, but hanging far above him; ringing out the old generation, and ringing in the new, with a mechanical, almost oppressive regularity, and an iron constancy which often makes them and their gray towers the most revered and ancient things in a large city. The great clock strikes—it is the only music, except the thunder, that can fill the air. Indeed, there is something almost elemental in the sound of these colossal and many-centuried bells. As the wind howls at night through their belfries, the great beams seem to groan with delight, the heavy wheels, which sway the bells, begin to move and creak; and the enormous clappers swing slowly, as though longing to respond before the time.

At Tournay there is a famous old belfry. It dates from the twelfth century, and is said to be built on a Roman base. It now possesses forty bells. It commands the town and the country round, and from its summit is obtained a clear view of the largest and finest cathedral in Belgium, with its five magnificent towers. Four brothers guard the summit of the belfry at Tournay, and relieve each other day and night, at intervals of ten hours. All through the night a light is seen burning in the topmost gallery, and when a fire breaks out, the tocsin, or big bell, is tolled up aloft by the watchman. He is never allowed to sleep—indeed, as he informed us, showing us his scanty accommodation, it would be difficult to sleep up there.

On stormy nights a whirlwind seems to select that watchman and his tower for its most violent attacks; the darkness is often so great that nothing of the town below can be seen. The tower rocks to and fro, and startled birds dash themselves upon the shaking light, like sea birds upon a lighthouse lantern. Such seasons are not without real danger—more than once the lightning has melted and twisted the iron hasps about the tower, and within the memory of man the masonry itself has been struck. During the long peals of thunder that come rolling with the black rain clouds over the level plains of Belgium, the belfry begins to vibrate like a huge musical instrument, as it is; the bells peal out, and seem to claim affinity with the deep bass of the thunder, while the shrill wind shrieks a demoniac treble to the wild and stormy music.

All through the still summer night the belfry lamp burns like a star. It is the only point of yellow light that can be seen up so high, and when the moon is bright it looks almost red in the silvery atmosphere. Then it is that the music of the bells floats farthest over the plains, and the postillion hears the sound as he hurries along the high road from Brussels or Lille, and, smacking his whip loudly, he shouts to his weary steed as he sees the light of the old tower of Tournay come in sight. Bells are heard best when they are rung upon a slope or in a valley. The traveler may well wonder at the distinctness with which he can hear the monastery bells on the Lake of Lugano, or the church bells over some of the long reaches of the Rhine. Next to valleys, plains carry the sound farthest. Fortunately, many of the finest bell-towers in existence are so situated. It is well known how freely the sound of the bells travels over Salisbury Plain. The same music steals far and wide over the Lombard plains from Milan Cathedral; over the Campagna from St. Peter's at Rome; over the flats of Alsatia to the Vosges Mountains and the Black Forest from the Strasbourg spire; and, lastly, over the plain of Belgium from the towers of Tournay, Ghent, Brussels, Louvain, and Antwerp. The belfry at Bruges lies in a hollow, and can only be seen and heard along the line of its own valley.

To take one's stand at the summit of Strasbourg Cathedral at the ringing of the sunset bell, just at the close of some effulgent summer's day, is to witness one of the finest sights in the world. The moment is one of brief but ineffable splendor, when, between the mountains and the plain, just as the sun is setting, the mists rise suddenly in strange sweeps and spirals, and are smitten through with the golden fire which, melting down through a thousand tints, passes, with the rapidity of a dream, into the cold purples of the night.

Pass for a moment, in imagination, from such a scene to the summit of Antwerp Cathedral at sunrise. Delicately tall, and not dissimilar in character, the Antwerp spire exceeds in height its sister at Strasbourg, which is commonly supposed to be the highest in the world. The Antwerp