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DESCRIPTIVE
ILLUSTRATED CATALOGUE
OF THE
SIXTY-EIGHT COMPETITIVE DESIGNS
FOR THE
GREAT TOWER
FOR LONDON,

COMPILED AND EDITED BY

FRED. C. LYNDE, A.M.INST.C.E.,

25, CROSS STREET, MANCHESTER, AND 9, VICTORIA STREET,
WESTMINSTER, LONDON,

FOR

THE TOWER COMPANY, LIMITED,

St. STEPHEN'S CHAMBERS, WESTMINSTER,

LONDON, S.W.

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PRINTED AND PUBLISHED BY "INDUSTRIES,"

358, STRAND, LONDON, W.C.

1890.

The Illustrations are all engraved to the uniform scale
of 300 Feet to an Inch.

NOTE.—The Design which obtained the First Premium
value 500 Guineas, will be found on page 82; and
on page 110 will be found the Design which
obtained the Second Premium, value 250 Guineas.

The Numbers attached to the Designs are consecutive,
and simply indicate the order in which they were examined
by the Judges, without any reference to their respective merits.

PREFACE.



ONE of the objects of greatest interest at Paris is The Eiffel Tower, which is situated in the Champ de Mars. It was designed by the eminent French Engineer, M. Gustave Eiffel, and formed the most remarkable feature of the French Exhibition of 1889.

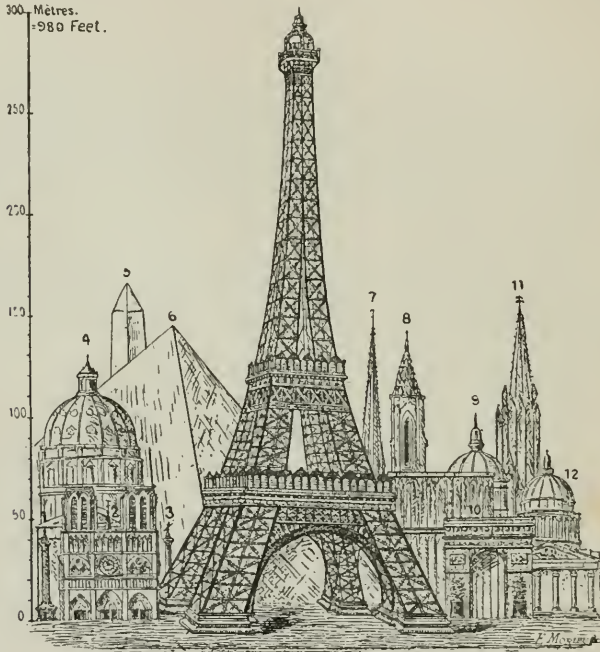
In the construction of this Tower, 7,500 tons of Steel and Iron were used, consisting of 12,000 specially designed pieces, fastened together with 2,500,000 rivets, the number of drilled holes being 7,000,000.

The height of the Eiffel Tower is 300 metres, or 984.26 feet above the ground. The cost was £280,000.

The graceful form of the Eiffel Tower was not determined by considerations of its appearance, but by mathematical considerations dependent upon the conditions of the wind's intensity. It rests upon its foundations on **four feet**, each of which consists of **four main girders**, braced together by lattice girders and crossbeams. The structure therefore rests upon **sixteen main frames**, four rising out of each foot. By this means, the **total weight of the Tower is distributed over a large area, which reduces the pressure per square foot upon the foundations. In fact, the foundations are loaded with no greater weight than those of an ordinary five-storied building.**

The project of building the Eiffel Tower was attacked with much animosity, as is usually the case with new undertakings, but the large amount of public patronage which it continues to receive proves that such opposition was unfounded.

The popularity of the Eiffel Tower may be fairly gauged by the receipts in connection with it. During the Exhibition the net takings on the Tower amounted to £260,000, a sum almost equal to its cost.



THE EIFFEL TOWER.

	Height in feet.	
1. THE VENDÔME COLUMN, PARIS	147	6. GREAT PYRAMID OF EGYPT
2. NOTRE DAME, PARIS ...	217	7. ROUEN CATHEDRAL ...
3. COLUMN OF JULY, PARIS	154	8. STRASBURG CATHEDRAL
4. SAINT PETER'S, ROME ...	433	9. INVALIDES AT PARIS ...
5. WASHINGTON OBELISK ...	554	10. ARC DE TRIOMPHE, PARIS
		11. COLOGNE CATHEDRAL ...
		12. PANTHEON AT PARIS ...

During the period the Tower has been open, since the closing of the Exhibition, the **average weekly** receipts from entrance charges alone (excluding rents of shops and profits

from the restaurants and other sources) amounted to £1,148, and this during very unfavourable weather. The receipts from the shops, restaurants, concerts, &c., would very materially raise the above-named weekly average, leaving a very large profit over expenses. The Eiffel Tower has already rendered valuable service to science, besides affording special opportunities for observation and research, which, owing to its altitude, are not otherwise attainable. Taking into consideration the enormous popularity of the Eiffel Tower and the consequent pecuniary benefits conferred on those interested in that undertaking, it is not too much to anticipate that, in the course of a short time, every important country will possess its tall Tower. The project of erecting a great Tower in London soon found the willing support of many capitalists, who felt convinced that if the scheme were properly laid before the public there would be no great difficulty in accomplishing the object.

A company was formed, viz.: **The Tower Company, Limited**, the promoters being the following gentlemen: **Sir Edward W. Watkin, Bart., M.P., E. H. Carbutt, Esq., M.Inst.C.E., William Mewburn, Esq., Captain Francis Pavy, R. W. Perks, Esq., Henry D. Pochin, Esq., J.P., and the late T. A. Walker, Esq.,** contractor for the Manchester Ship Canal, Severn Tunnel, and other works. These gentlemen at once proceeded to place the scheme before the public. The first step in this direction was to invite designs to be submitted for competition, two prizes being offered, the value of which were **500 guineas and 250 guineas.**

The response to this invitation resulted in **sixty-eight designs** and suggestions being sent in, some of which were from the United States, Germany, Australia, Sweden, Italy, Austria, Turkey, and Canada. The very great public interest which the exhibition of the drawings created has induced the promoters to publish the principal

elevations, engraved to a uniform reduced scale of 300 feet to an inch, in the following pages.

To adjudicate upon the merits of the designs, a Committee of Jurors was appointed, among whom were Sir Frederick Bramwell, Sir Benjamin Baker, Sir Edward J. Harland, M.P., Mr. J. F. Moulton, Q.C., Professor Alex. B. W. Kennedy, Mr. Charles Liddell, C.E., Mr. Verity, and Mr. E. H. Carbutt, Chairman.

After very careful consideration, the first prize of 500 Guineas was awarded to Messrs. A. D. Stewart, J. M. McLaren and W. Dunn, of London, and the second prize of 250 Guineas was gained by Messrs. J. J. Webster and W. Haigh, of Liverpool.

The jurors honourably mentioned the design of Mr. Max am Ende, and expressed a high opinion of ingenuity displayed in many of the other designs.

Both the Prize Designs are for steel structures, octagonal in form, the first being 1,200 feet, and the second, 1,300 feet high.

Sir Benjamin Baker has consented to become Engineer of the project, and he will, with his wide engineering experience, make the Tower unexceptionable, not only as an engineering structure, but as a work of utility.

It is proposed that the Tower shall be much more spacious and of greater altitude than the Eiffel Tower, with a view to its being still more useful, and to accommodate a larger portion of the public. Special facilities for pleasure-seekers will be provided, such as Restaurants, Theatre, Shops, Turkish Baths, Promenades, Winter Gardens, and a variety of other amusements, which will not only afford healthful recreation for the million, but, it is anticipated, will insure a profitable return for the Shareholders.

The Tower will be provided with Elevators, and upon the top stage will be an Observatory and rooms for scientific experiments, which will form a very interesting feature of

this undertaking. Experiments in signalling from the Eiffel Tower have already been made, with the result that it has been successfully accomplished at a distance of 75 miles. Observations in recording the intensity and direction of the wind under varying conditions, the micrographic study of the air, and the question of the existence of bacillæ in certain pure and rarified media, are only a few of the important investigations which would be demonstrated. Astronomical observations from this immense height, with such purity of air, and freedom from mists, will extend our knowledge in this branch of science, and render meteorological photography more perfect.

Doctors in Paris have already discovered the benefits to be derived by patients suffering from pneumonia and throat affections, and many under their advice have availed themselves of the "pure air cure" on the Eiffel Tower with very beneficial results, thus the Tower may be utilized in the interests of suffering humanity.

Many sites have been suggested as suitable for the Tower, with the result that the high land between Willesden and Harrow at Wembley Park, has been selected (subject to further consideration), consisting of an estate of 280 acres, of which 150 may be appropriated for the use of the Tower and surrounding Park. This Tower would stand at a considerable elevation instead of as in the case of Eiffel Tower being at the river level.

The natural beauty of this well-wooded country, and facility of access (being only 12 minutes from Baker Street by railway), render it a most desirable site, particularly as the Metropolitan Railway passes through it, and that company is constructing a special station for the accommodation of visitors, and have agreed to book passengers in concert with other companies from all parts of England at through fares.

The following is a Copy of the Specification issued by
the Promoters on November 1st, 1889.

TOWER.

*The Promoters offer Prizes of 500 guineas for the best
and of 250 guineas for the second best Design and
Estimate for a Tower of not less than 1,200 feet
in height*

Specification.

1. The designer will assume that the foundations are perfect—that is to say, sand, stone, hard clay, or gravel—and will estimate accordingly.

2. The structure must be so designed as to resist wind pressure, sudden storms, and be guarded as regards lightning. The material preferred is steel, but the designer is not to be confined to the use of that, or any other material. The designer may consider, if steel be used, a stability, under a maximum wind pressure of 56lbs. per square foot, the stress on the steel not to exceed $7\frac{1}{2}$ tons per square inch, and under an assumed pressure of double that amount, the structure to be stable as a whole, but he will adopt his own strength and strains.

3. As regards lifts, the designer can either provide for one vertical lift from the bottom to top, or a series of lifts. The safety of the lifts is matter of first importance. Speed is important.

4. The Tower must be divided into such number of storeys as the designer thinks will best suit his design, while giving adequate floor space, and each of these storeys must be capable of bearing the weight of restaurants, offices, &c. The lifts must be supplemented as from storey to storey by staircases. As matter of information, it may be mentioned that the "Eiffel" Tower has two "Roux" lifts to the first platform,

which can raise together 2,400 visitors per hour; two "Otis" lifts, together, 800 per hour; and one "Edoux" lift, from second to third platform, 800 per hour. Speed, feet per minute: "Roux," 197; "Otis," 394; and "Edoux," 177.

5. Provision must be made for Electric Lighting, &c.

6. It is not intended in these suggestions to do more than give outlines for the guidance of the designer; as it is desired that he should have full liberty in the combinations he chooses to effect.

7. Designs to be accompanied by bills of quantities and estimates of:—

- a. The weight (and description) of material.
- b. Cost of lifts (with description).
- c. Cost of labour, and superintendence in construction.

8. The designs and estimates are open to all competitors, and must be sent in on or before the end of February next, unless further time be applied for by foreign competitors. Any such application will be considered on its merits.

9. The Jury who will decide on designs and estimates sent in will be:—

SIR FREDERICK BRAMWELL, F.R.S., M.Inst.C.E.

BENJAMIN BAKER, Esq., M.Inst.C.E.

SIR EDWARD HARLAND, Bart, M.P.

PROF. ALEX. B. W. KENNEDY, F.R.S., M.Inst.C.E.

CHARLES LIDDELL, Esq., C.E.

J. F. MOULTON, Esq., Q.C., F.R.S., Assoc.Inst.C.E.

T. A. WALKER, Esq., Assoc.Inst.C.E.

THOMAS VERITY, Esq., F.R.I.B.A., F.C.L.

E. H. CARBUTT, M.Inst.C.E., *Chairman.*

with power to add to their number.

10. The designs will be publicly exhibited (with or without the name and address of the designer, as the designer himself may decide) in London prior to, or subsequently to, adjudication.

EDWARD W. WATKIN,

E. H. CARBUTT,

WILLIAM MEWBURN,

FRANCIS PAVY,

R. W. PERKS,

HENRY D. POCHIN,

T. A. WALKER,

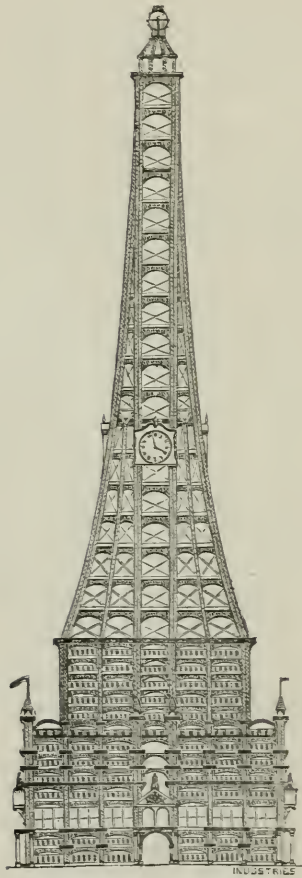
ALFRED B. GARSIDE, *Secretary.*

Offices of the Company,

ST. STEPHEN'S CHAMBERS,

WESTMINSTER, S.W.

DESIGN No. 1.



By M. T. OTIS, ROCHESTER, U.S.A.

DESIGN No. 1.By M. T. OTIS, Rochester, U.S.A.PARTICULARS.**Height**—1,355 feet.**Base**—400 feet square.**Weight**—If of Iron, 26,500 tons; if of Steel, 21,300 tons.**Material of Design submitted**—Chiefly Iron.**Cost**—No Cost given.MAIN FEATURES CLAIMED:

A Banquet Room, 400 feet square, 50 feet high.
 A Balcony 50 feet wide all round at the top of first section.
 Three Elevators and winding stairs. An Observatory
 57 feet square.

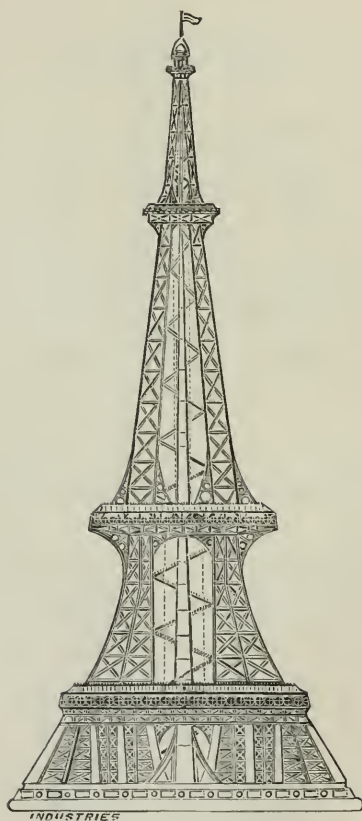
The top of the Tower is surmounted by a gilt ball,
 30 feet diameter.

Bolts are used throughout instead of rivets.

It is claimed that "there can be no swaying by the
 wind."

The Tower proper is supported upon 64 posts, thus
 distributing the weight over a large area, and thereby pre-
 venting settlement, should the foundation not be sufficiently
 solid.

DESIGN No. 2.



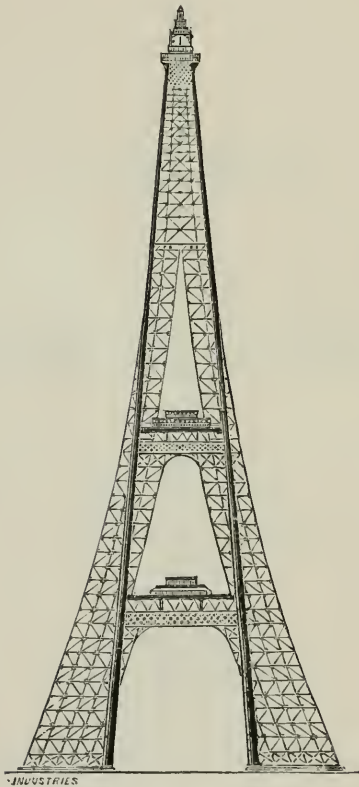
By D. VERNON, TOPSHAM.

DESIGN No. 2.

By D. VERNON, Topsham, Devon.

Height—1,225 feet.

DESIGN No. 3.



"NORTHUMBRIAN."

JOHN BATEY, 47, HEYTESBURY STREET, DUBLIN.

DESIGN No. 3.—“NORTHUMBRIAN.”

JOHN BATEY,
47, Heytesbury Street, Dublin.

PARTICULARS.

Height—1,216 feet.

Base—Square, Length of Side, 520 feet.

Weight—9,574 tons.

Material—Steel.

Cost—£40,957.

MAIN FEATURES CLAIMED:

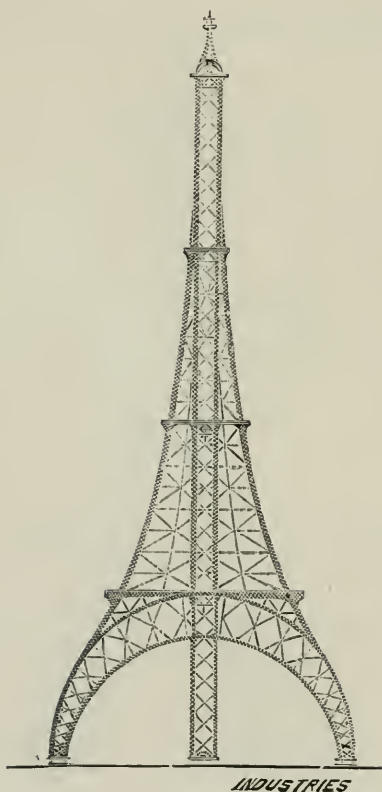
The main supports consist of 4 steel tubes, 3 feet diameter at top and 15 feet diameter at bottom.

The absence of all strains except compression.

The upper end of each tube to form a cistern for water for working the hoists, &c.

The top of Tower is arranged for lighthouse illumination. The total weight of lantern, &c., above the top of tubes is under 20 tons. Four lifts to the top platform of Tower—two cages being used to balance the remaining two—thus very little power would be required. On the outside each lift a staircase is provided.

DESIGN No. 4.



BY H. FIDLER, LYNDHURST, GROVE PARK, CHISWICK.

DESIGN No. 4.

By H. FIDLER,

Lyndhurst Grove Park, Chiswick.

PARTICULARS.

Height—1,200 feet.

Base—500 feet square.

Weight—11,500 tons.

Material—Steel.

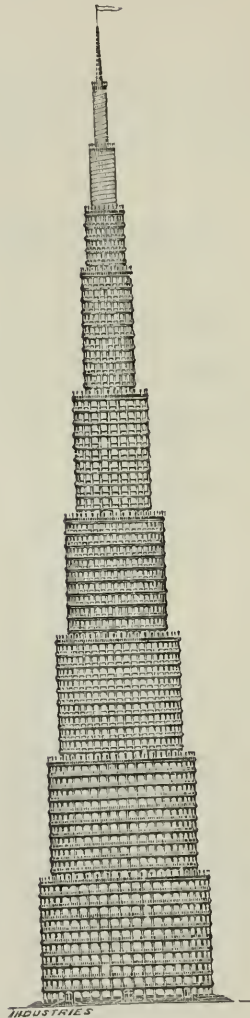
Cost—£350,000.

MAIN FEATURES CLAIMED:

The calculation for wind pressure is taken at 56 lbs. per square foot upon an area equal to three times the net area seen in front elevation. The **vertical lift shaft** for the entire height of 1,200 feet is surrounded by a **continuous staircase**. **Two separate and independent staircases** will be provided from the ground to the first floor, and one staircase the remainder of the height.

There are **4 cages**, having a **speed of 280 feet** per minute, each cage to hold **60 people**, capable of conveying **1,440 persons** per hour, from the ground level to fourth floor. The top of the Tower is surmounted by a lantern with **Electric Light**.

DESIGN No. 5.



"CIRCUMFERENTIALLY, RADIALY, AND DIAGONALLY
BOUND."

C. BAILLAIRGE, CITY ENGINEER, QUEBEC, CANADA.

DESIGN No. 5.—“CIRCUMFERENTIALY, RADIALY AND
DIAGONALLY BOUND.”

C. BAILLAIRGE,

City Engineer, Quebec, Canada.

PARTICULARS.

Height—1,600 feet.

Base—Circular.

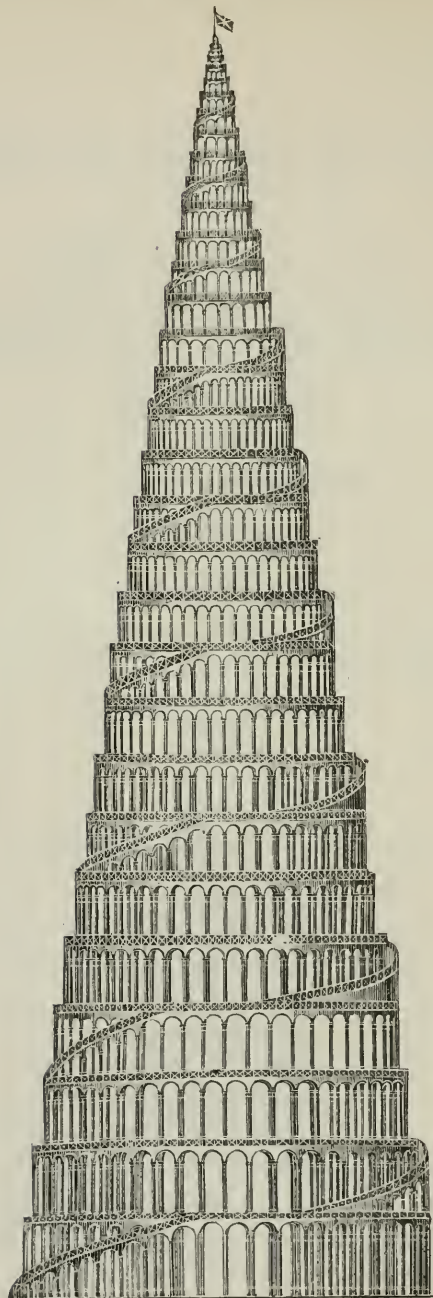
Weight—14,303 tons.

Materials—Cast and Wrought Iron.

Cost—925,516 dollars.

MAIN FEATURES CLAIMED:

Capability of being taken down in sections—each section being useful for other purposes. All bolted together instead of being rivetted. There are **elevators and stairs, and galleries** at each stage **20** feet in width, excepting those to four upper tiers which are **10** feet wide. The structure being closed, the wind pressure is calculated at **56** lbs. There are **204,000** square feet, and the maximum wind pressure exerted is **4,204** tons. The resistance is as **3·4** to **1**. The factor of safety would be increased if the glazing were to be blown out in a hurricane. The vertical pressure exerted on the foundation area is less than $\frac{1}{4}$ ton to each superficial foot, with a maximum pressure of $1\frac{1}{8}$ ton per superficial foot. **Lighting by Electricity** is the method adopted.



INDUSTRIES

By S. FISHER, 32, EAGLE WHARF ROAD, LONDON, N.

DESIGN No. 6.By S. FISHER,32, Eagle Wharf Road, London, N.PARTICULARS.

Height—2,000 feet, capable of being reduced to 1,700 feet, 1,500 feet, or 1,250 feet.

Base—Circular, Diameter equal to $\frac{1}{3}$ height.

Weight—

1,250 feet.	1,500 feet.	1,750 feet.	2,000 feet.
104,289 tons.	172,962 tons.	234,493 tons.	312,550 tons.

Materials—Cast and Wrought Iron.

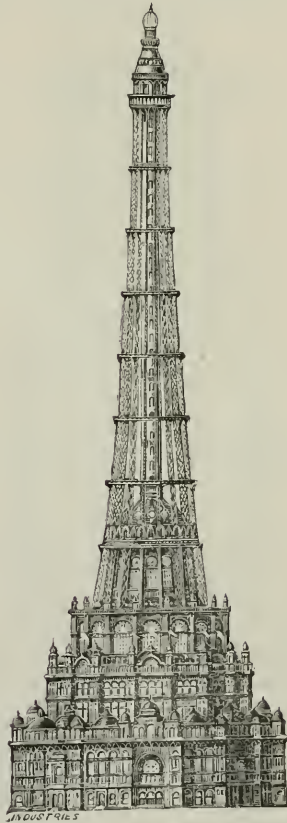
Cost—

1,250 ft. high	1,500 ft. high	1,750 ft. high	2,000 ft. high
£1,065,365.	£1,758,995.	£2,381,480.	£3,159,500.

MAIN FEATURES CLAIMED:

A spiral column ornamented to form a “National Monument”—in short, a “Monument of Hieroglyphics emblematical of British History during Queen Victoria’s Reign.” It is suggested to run a locomotive engine and train half-way up the spiral gradient. The gradient would begin at 1 in 20 and gradually increase to 1 in 10. It is intended to have 12 hydraulic lifts, and engine power of 500 nominal horse power.

DESIGN No. 7.



BY KINKEL AND PÖHL, WASHINGTON, U.S.A.

DESIGN No. 7.

By KINKEL and POHL,
Washington, U.S.A.

PARTICULARS.

Height—1,250 feet.

Base—Circular, Diameter of Base, 192 feet.

Weight—Not given.

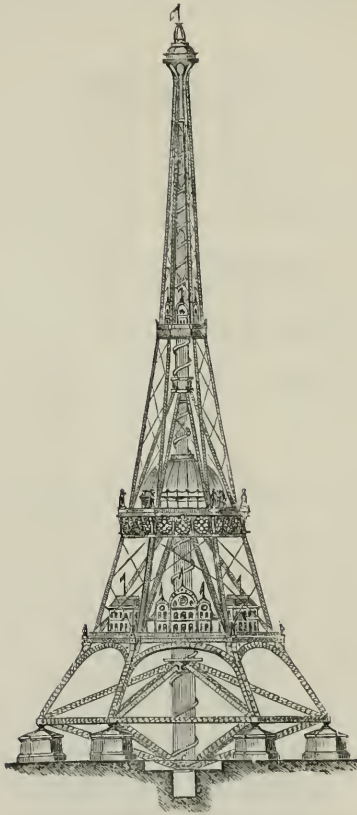
Material—Steel throughout.

Cost—1,687,900 dollars.

MAIN FEATURES CLAIMED:

This Tower consists of **16 hyperbolic curved legs** of latticed steel, diminishing from **30 feet** at the bottom to **5 feet** at the top. The architectural ornamental work is in modern Indian Oriental style, with large promenade terraces, pavilions, minarets, &c. "The principal features are the mighty proportions of the Tower," the large **public lobby** with a mighty dome **192 feet** diameter, and with a total floor space of **80,000 square feet**. There are **4 elevators**, in sections, to run at **250 feet per minute**. The wind pressure is calculated at **60 lbs. per square foot**. The **globe** at the apex is **25 feet** diameter, and contains **16 powerful electric lights**. The balconies are also provided with **electric lights**. On the ground floor are **12 large rooms** useful for **restaurants, bazaars, &c.**, each of about **4,000 square feet**; similar rooms are provided on every floor.

DESIGN No. 8.



“WP.”

F. O. PEARSON AND B. H. WALLIN,
GÖTEBORGS MEK WERKSTAD, GÖTEBORG, SWEDEN.

DESIGN No. 8. ("W.D.")

F. O. PERSSON and B. H. WALLIN,
Göteborgs Mek Werkstad, Göteborg,
Sweden.

PARTICULARS.

Height—1,200 feet.

Base—Hexagonal.

Weight—7,000 tons.

Material—Steel.

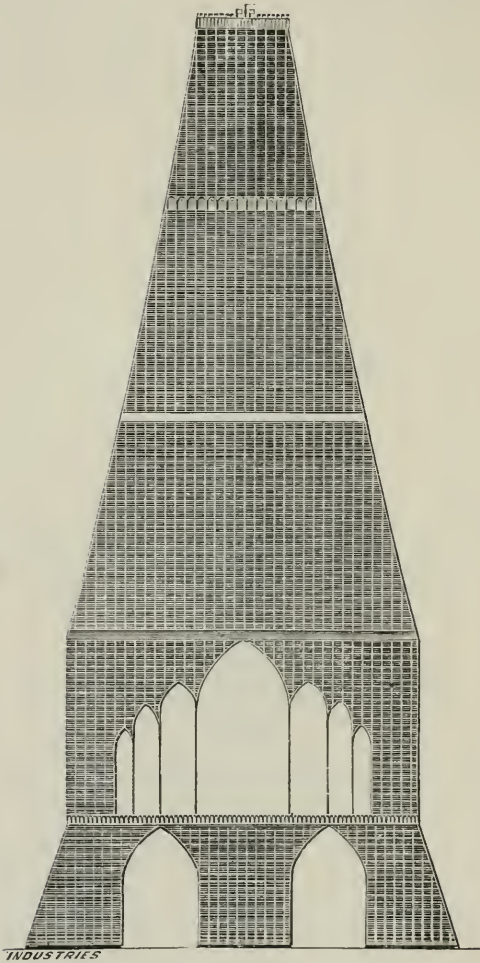
Cost—Not given.

The total cost of the lifts amounts to about £15,000. The cost of the construction and superintendence of the building amounts to about £12,000.

CHIEF FEATURES CLAIMED:

The principal bearing member of this design is a cylindrical or hexagonal tube, built of steel plates, sufficiently large in diameter to allow of elevators to move up and down. This tube is 36 feet diameter at base, and 15 feet at the top, and rests at its base on 6in. roll bearings, 7 feet long, the journals being 2 feet diameter and 7 feet long. This Tower is hexagonal in shape, and is divided into 4 main stories, the lowest of which has a superficial area of 60,000 square feet. The second story has a floor space of 23,000 square feet. Total floor space equal to 130,000 square feet. Staircases and lifts are provided.

DESIGN No. 9.



"MULTUM IN PARVO."

R. NETTLE, REDRUTH.

DESIGN No. 9.—“MULTUM IN PARVO.”

R. NETTLE, Redruth.

PARTICULARS.

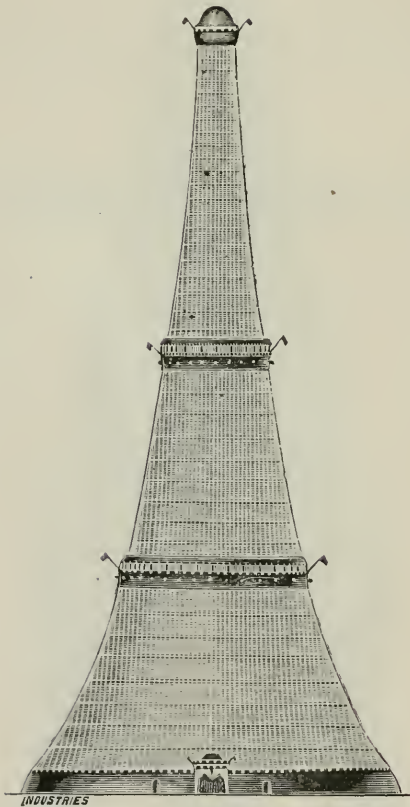
Height—1,500 feet.

Weight—Not given.

Materials—Steel and Iron.

Cost—£204,941 1s. od.

DESIGN No. 10.



"MY TOWER."

F. WILKINS, 13, POLAND STREET, LONDON, W.

DESIGN No. 10.—“MY TOWER.”

F. WILKINS, C.E.,
13, Poland Street, London, W.

PARTICULARS.

Height—1,234 feet.

Base—40 feet in diameter.

Materials—Steel and glass.

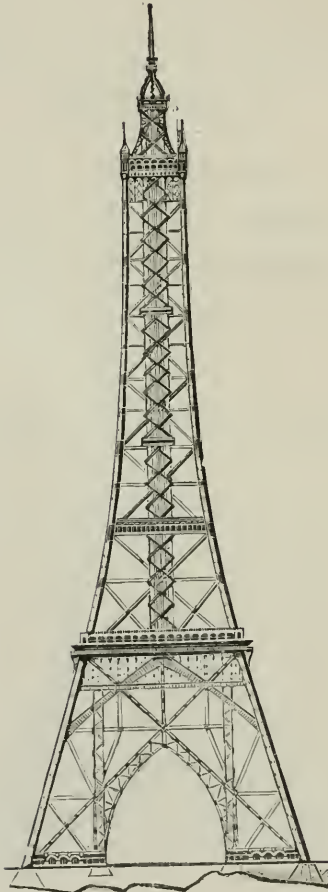
Cost—£107,000.

CHIEF FEATURES CLAIMED:

The Tower contains **residences and offices**. There are **12** automatic lifts. The downward motion of the lifts will supply **pure air**, which may be laid on to houses, &c. It is lighted by **Electricity**. All the metal is to be enamelled.

The designer proposes to build this Tower in Kensington Gardens, or in the Exhibition Road, and that it should be used for model lodgings, residential flats, public and private offices, observatories, exhibitions, shows, library patent office, courts of arbitration, stock exchange, County Council, scientific institutions, and all other measures tending to civilize and educate the human race. Fireproof chambers for deeds, &c., picture galleries, art, science and literature, practical polytechnical institution, including education in agriculture, horticulture, &c., and numerous other purposes, including the supply of pure air to houses in the neighbourhood, laid on by pipes as gas is. This Tower would, in case of war, be used for signalling. The building of this Tower would take twelve months.

DESIGN No. 11.



E. S. SHAW, BOSTON, MASSACHUSETTS, U.S.A.

DESIGN No. 11.E. S. SHAW,Boston, Massachusetts, U.S.A.PARTICULARS.

Height—1,400 feet, with signal shaft another 100 feet, fixed to the top.

Base—Square, having sides of 500 feet.

Weight—Of metal only, 17,790 tons.

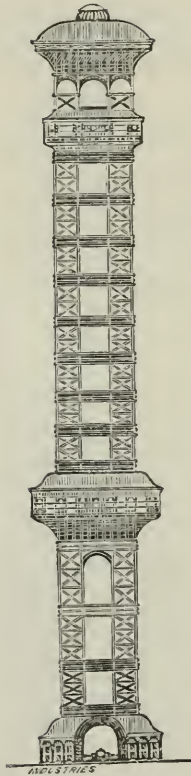
Materials—Steel and Iron.

Cost—£575,933.

CHIEF FEATURES CLAIMED:

To have **Tubular Columns** at the corners of the square. The Ground Floor consists of **4 Pavilions** of a total area of **74,000** square feet. The first, or principal floor, is **360** feet high, and is called the Promenade Floor. It is **300** feet square, and covers a net area of **75,000** square feet. The Drawing Room Floor is **575** feet above the ground, and contains **28,000** square feet. The Observation Floors are at a height of **1,200** feet to **1,230** feet above the ground, **100** feet square, with an area of **10,000** square feet, with covered gallery. Above these floors is provided a **Weather Observatory**, surmounted by a **Lantern** 10 feet diameter, for a powerful **Electric Light** from the roof of which observations may be made **1,400** feet above the ground. From the Promenade Floor to the Weather Observatory Floor, a distance of **950** feet, there is a single shaft, situated in the centre of the Tower, and provided with **four** wells for lifts. **Two** independent **staircases**, **3** feet wide, are provided outside this shaft, one for ascent, the other for descent. Speed of two lifts, **400** feet per minute, of remaining two lifts, **200** feet per minute. The total wind pressure upon the Tower is estimated at **3,000** tons, at **56** lbs. per square foot.

DESIGN No. 12.



E. WORRAL & CO., 26, BYROM STREET, LIVERPOOL.

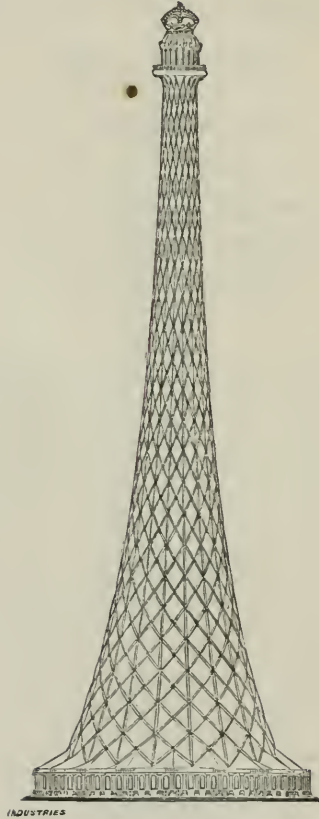
E. WORRAL & CO.,
26, Byrom Street, Liverpool.

PARTICULARS.**Height**—1,200 feet.**Base**—Square.**Weight**—Not stated.**Material**—Mild Steel.**Cost**—Not stated.CHIEF FEATURES CLAIMED:

The top stage of the Tower measures **195** feet square, contains a **Band Stand** and **Observatory** and **Restaurants**. The roof is of steel and glass. The support from the ground is a rectangular shaft, **125** feet square at its narrowest points. The top stage therefore overhangs the shaft by **35** feet all round, supported by brackets.

There are **four lifts**, each containing **875** superficial feet, and there are **four distinct staircases**, each **20** feet wide, with resting places every **9** feet. The ground floor contains Machinery Rooms, Offices, &c., and projects on each side of the main shaft for about **40** feet, forming an area of over **40,000** superficial feet. The first and second stages project beyond the main shaft and are supported by brackets in a similar manner to the top stage. The first stage is **400** feet from the ground and is enclosed in sheet steel walls, as is also the ground floor; it contains stalls for merchandise, Restaurants, Promenade. The basement below this floor are large **Dining Halls, Kitchens, Restaurants** and Lavatories, and above is a **Music Hall, with Promenade, Restaurants, and Lavatories, &c., &c.** The second stage is **1,000** feet from the ground and contains **Large Entertainment Hall, Restaurant, &c.** Two of the lifts are arranged to stop at the different stages, and two to make express journeys at a high speed to the **Grand Promenade** at the top, **1,200** feet high.

DESIGN No. 13



THOS. V. TREW,
26, TARBERT ROAD, EAST DULWICH GROVE, LONDON, S.E.

DESIGN No. 13.

THOS. V. TREW,

26, Tarbert Road, East Dulwich Grove,

London, S.E.

PARTICULARS.

Height—1,267 feet.

Base—Circular. 400 feet diameter, with 40 feet extra of buildings.

Weight—11,770 tons.

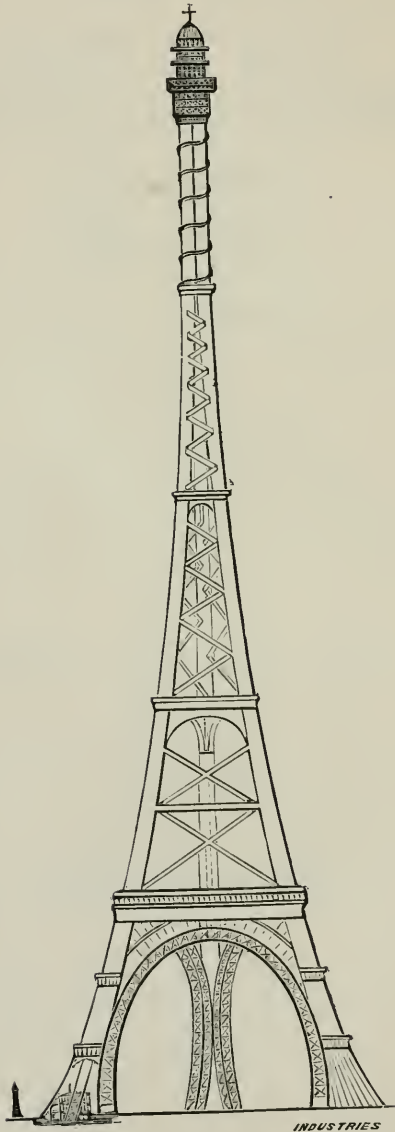
Materials—Steel and Iron.

Cost—Exclusive of Steel—£260,000.

CHIEF FEATURES CLAIMED:

This design is emblematical of the “**Crown**,” supported upon the United Kingdom (represented by the “**Rose, Shamrock and Thistle**” with the **Colonies and British Possessions** for a base. There are **18 Vertical Girders** bound together, and at the top is the Crown, the interior of which is lighted by **18** arc electric lamps. The platforms are arranged for **Restaurants** inside, and **Promenades** outside, being formed in terraces on the periphery to afford better view for a large number of people. There are **seven** lifts, 4 to first platform, 3 from there to summit, each to carry **30** passengers. The buildings round the base are of brickwork, stuccoed, intended for **Bazaars, Engine and Boiler Sheds**, or any suitable use.

DESIGN No. 14.



J. I. THORNYCROFT, CHISWICK, LONDON.

J. I. THORNYCROFT,

Chiswick, London.

PARTICULARS.

Height—1,760 feet, equal $\frac{1}{3}$ mile.

Base—Triangular.

Weight—16,830 tons.

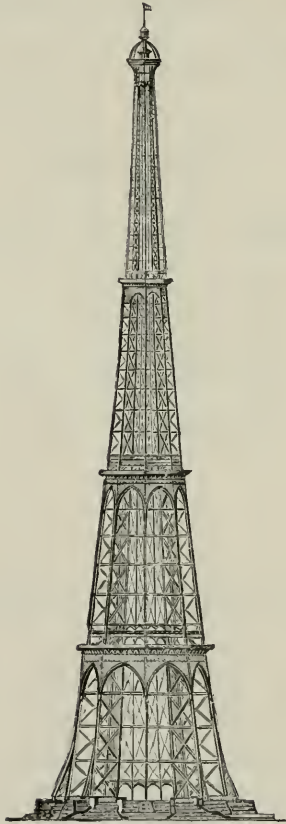
Material - Steel.

CHIEF FEATURES CLAIMED:

This Tower is formed by **three** principal members or tubes. **Lifts** are supported and propelled by **air pressure** which fit in **continuous tubes**, extending from the bottom to the top of Tower. **Staircases** are also provided. The total number of people that can be accommodated on the Tower is 20,000 at one time.

The balanced air-pressure lifts have been especially designed for this Tower, two being express lifts from the base to the top, and one stopping at each stage.

DESIGN No. 15.



INDUSTRIES

W. H. WOODCOCK,

6, VICTORIA STREET, LONDON, S.W.

DESIGN No. 15.W. H. WOODCOCK,6, Victoria Street, London, S.W.PARTICULARS.**Height**—1,300 feet.**Base**—Octagonal, 310 feet diameter.**Weight**—Metal work only, 12,000 tons.**Material**—Steel.**Cost**—£349,250 (excepting cost of ornamentation.)CHIEF FEATURES CLAIMED:

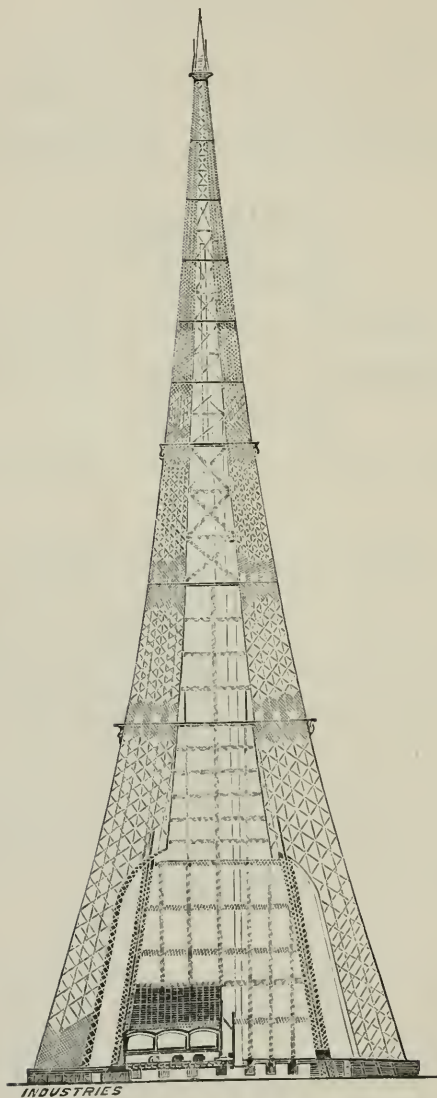
This Tower is divided into **four stories**, at each of which, excepting the top, two **platforms** are provided, the space between the lower and upper platforms being utilised for **restaurants, shops, post and telegraphic offices**, the upper platforms being left clear for promenading. There are separate platforms for landing and despatching passengers. The upper and lower platforms are connected by short lifts or staircases. The platform areas at the various stages are—1st stage, **63,000** square feet; 2nd stage, **26,400** square feet; 3rd stage, **8,600**. Top of Tower, **2,000** square feet.

Electrically-driven lifts are proposed, also **Electric Lighting**.

The speed of lifts is 200 feet per minute as a maximum. Special attention has been given to the safety of the lifts. The boiler-house is placed at some distance from the Tower to avoid heat and chimney dirt. **Double Staircases** are provided from base to top of Tower, one for ascending, the other for descending. The timber used is rendered **fireproof**.

It is proposed to have a **naval projector** for the top lantern.

DESIGN No. 16.



INDUSTRIES

E. DE VERE BUCKINGHAM,
ST. JOHN STREET, WINCHESTER.

DESIGN No. 16.

E. DE VERE BUCKINGHAM,

St. John Street, Winchester.

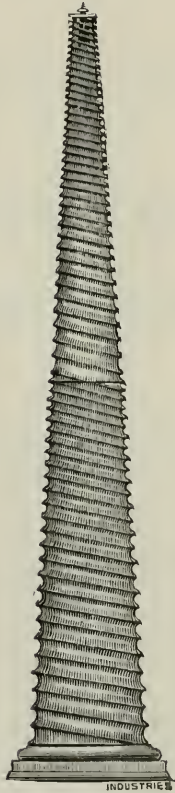
PARTICULARS :

Height—1,700 feet.

Material—Steel.

Cost—£235,603.

DESIGN No. 17.



J. HORTON, COPLEY, NEAR HALIFAX, YORKS.

DESIGN No. 17.

J. HORTON,

Copley, near Halifax, Yorks.

PARTICULARS.

Height—1,200 feet.

Base—180 feet diameter. The top measures 42 feet diameter.

Weight—16,760 tons.

Material—Corrugated Steel.

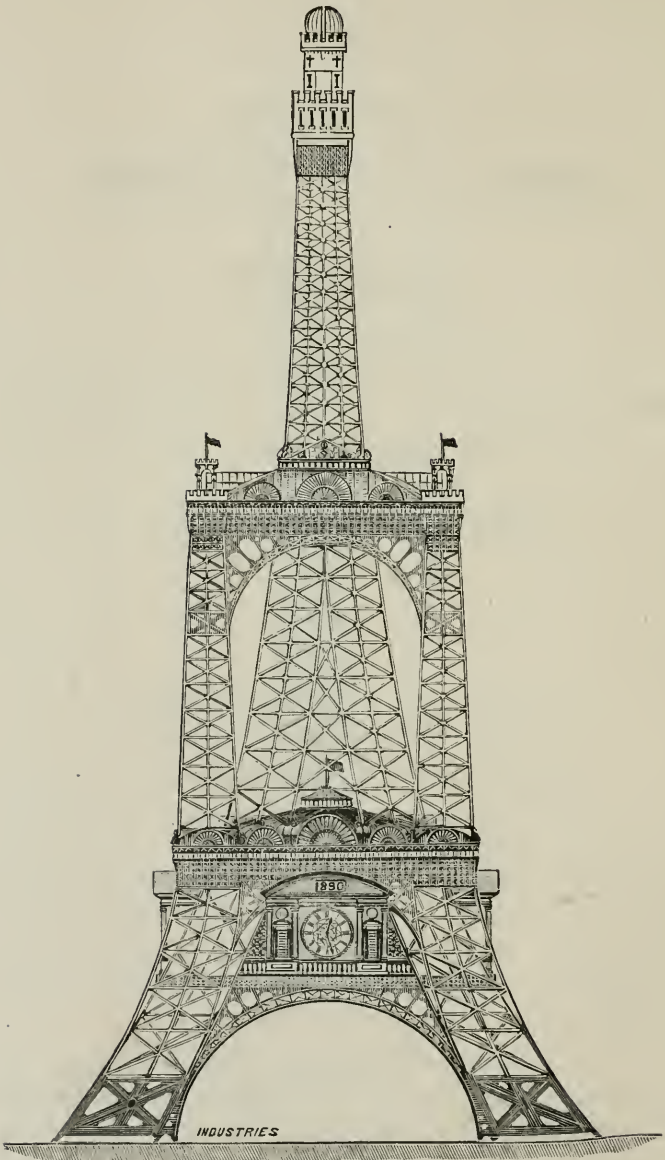
Cost—£399,600.

CHIEF FEATURES CLAIMED:

The shell of the Tower to be constructed of corrugated steel with **60** corrugations. The corrugations to run in straight channels from the bottom to the top. The bottom plates to be **1** inch thick, with a radius of **4 feet 6 inches** and to taper to the top of the Tower to corrugations **9** inch radius of $\frac{3}{8}$ inch plates. **A Spiral Promenade** from the bottom to the top is provided, also a **Spiral Road for Tramcars** reaching only half way up. The gradients to be **1 in 10**.

A Telescopic Lift 150 feet long, is intended to be used in calm weather, worked by hydraulic power, the tube to be **6** feet diameter. The ram to be **18** inches diameter, **300** feet long, with its cylinder **3** feet diameter. There are **24** floors, **50** feet apart, and **72** hydraulic lifts, **3** for each floor.

DESIGN No. 18.



J. H. M. HARRISON-VASEY,
24, VICARAGE TERRACE, SUNDERLAND.

J. H. M. HARRISON-VASEY.

24, Vicarage Terrace, Sunderland.

PARTICULARS.

Height—1,820 feet.

Base—Circular. Area of site, 20 acres.

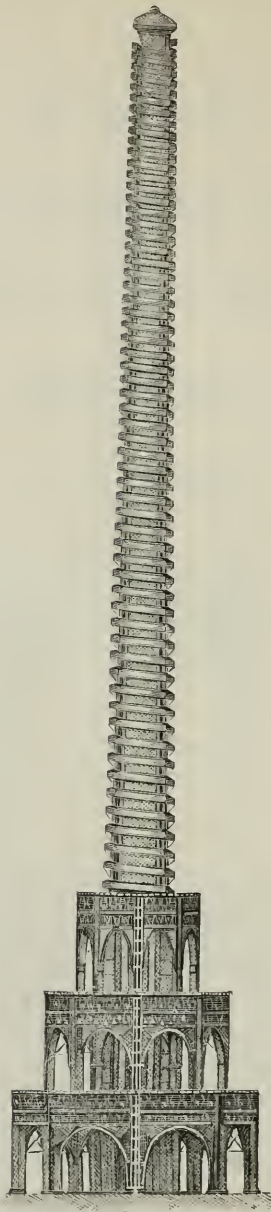
Weight—30,000 tons.

Material—Steel.

Cost—£1,000,000.

CHIEF FEATURES CLAIMED:

A large floor area and a **spiral road** of about $2\frac{1}{2}$ miles under which a **descending Railway** is constructed, the incline of both being **1 in 20**. The ground floor consists of **lift station, waiting rooms, engine rooms, and general offices**. The floors are constructed entirely of **steel girders**. A **captive parachute** to hold **4** persons, led in guides, is fitted in one of the corner towers, and regulated by a brake. The observatory floor is the highest, being **1,780** feet above the ground. This Tower to be fastened down by **64** steel bolts **36** feet long, and **3** feet diameter.



INDUSTRIES

"THE CENTURY TOWER."

J. W. COUCHMAN, PEMBURY ROAD, TOTTENHAM,
LONDON.

DESIGN No. 19.—“THE CENTURY TOWER.”

J. W. COUCHMAN,

Pembury Road, Tottenham, London.

PARTICULARS.

Height—1,900 feet.

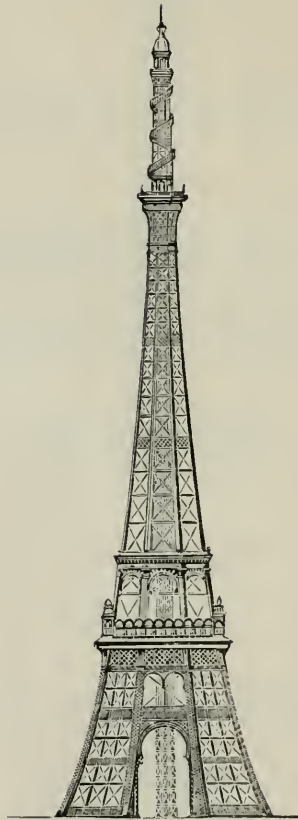
Base—Circular.

Weight—44,118 tons of metal.

Material—Steel.

Cost—£2,250,987.

DESIGN No. 20.



INDUSTRIES

T. C. CLARKE, M. INST. C. E., BROADWAY, NEW YORK
PROF. JOSEPH MAYER, UNION BRIDGE, CON., U. S. A.,
AND W. HILDENBRAND.

T. C. CLARKE, M.Inst.C.E.,

Broadway, New York;

Prof. JOSEPH MAYER,

Union Bridge, Connecticut, U. S. A., and

W. HILDENBRAND.

PARTICULARS.

Height—1,280 feet.

Base—350 feet square. The main skeleton of Tower is octagonal, the lower portion being carried out in a square form.

Weight—7,070 tons of metal.

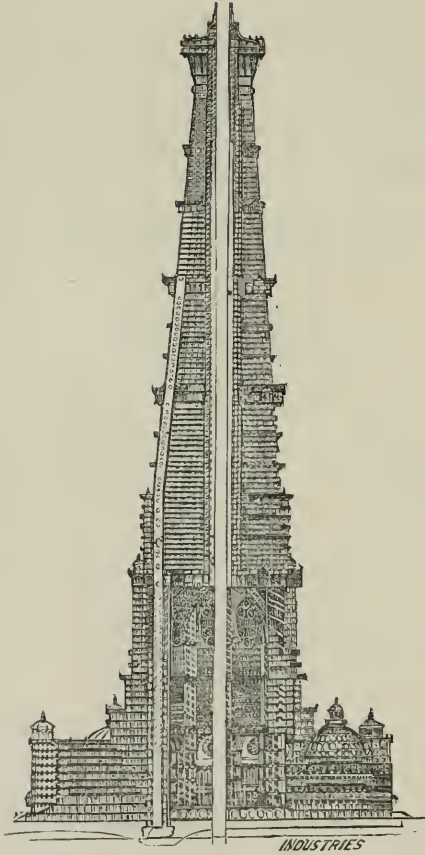
Material—Steel.

Cost—£315,000.

CHIEF FEATURES CLAIMED:

Great architectural elegance, with lifts and a circular staircase. This Tower has a capacity nearly double that of the Eiffel Tower. The floors are to be of concrete, laid on corrugated steel plates. The main stairway to have india-rubber treads. The time for completion would not exceed 18 months. "Otis" lifts are provided.

DESIGN No. 21.



"LIGHT, HEALTH, REST, PLEASURE."

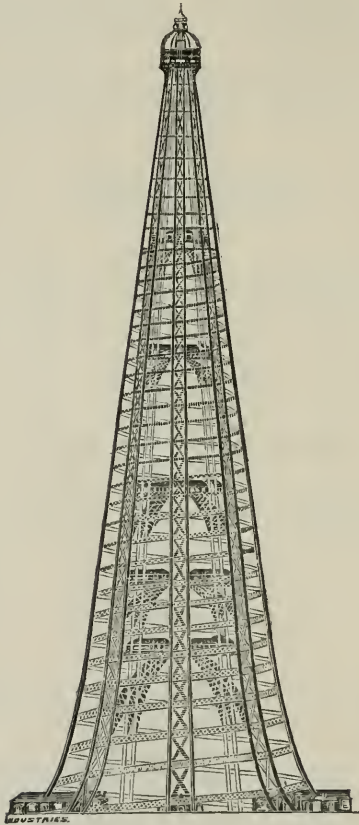
JAMES J. ARNOLD, LINCOLNS EASTLEIGH, SOUTHAMPTON.

JAMES J. ARNOLD,**Lincolns Eastleigh, Southampton.****PARTICULARS.****Height**—1,320 feet, or $\frac{1}{4}$ mile.**Base**—Hexagonal base, resolving itself into a circular column above.**Weight**—142,207 tons.**Materials**—Steel and Iron.**Cost**—Not stated.

CHIEF FEATURES CLAIMED:

In the first place, the greatest lighting surface for the interior. A **cellular system** is adopted, thereby insuring greater steadiness. There are **six platforms**. **Restaurants, Dining Rooms, Offices, and a Chapel, Hotel, and Sanatorium** are provided. The upper portion of the Tower is to be covered with glass, thus forming a **Crystal Tower**. **Electric Light** is provided. **Lifts** to travel at **600 feet per minute**, worked by **Electricity**. The general scheme of the skeleton is that of a **circular column** resting on a hollow hexagonal plinth, provided with broad radiating wings.

DESIGN No. 22.



"ALTIORA PETO."

HENRY ROSE,
2, PRINCES MANSIONS, VICTORIA STREET, LONDON, S.W. ;
E. J. EDWARDS, M.INST.C.E.,
12, DARTMOUTH STREET, WESTMINSTER.

DESIGN No. 22.—“ALTIORA PETO.”

HENRY ROSE,

2, Princes Mansions, Victoria Street,
London, S.W.;

E. J. EDWARDS, M.Inst.C.E.,
12, Dartmouth Street, Westminster.

PARTICULARS.

Height—1,274 feet.

Base—Octagonal. 470 feet at base, tapering to 40 feet diameter at top.

Weight—16,000 tons of Steel.

Materials—Steel framing, carrying tiles or terra-cotta panels, lined inside with match boarding and carton-pierre glass would be largely used.

Cost—£537,800.

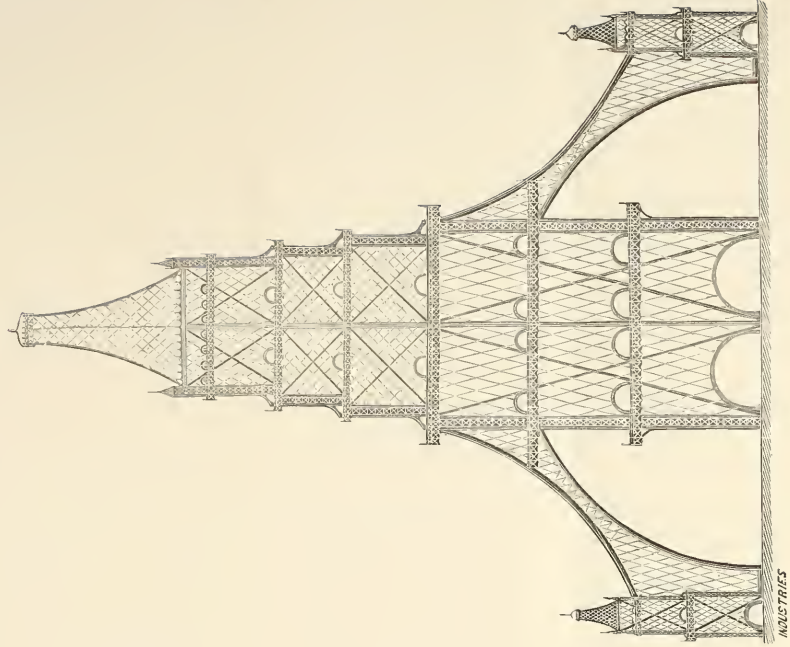
CHIEF FEATURES CLAIMED:

A two-track spiral Electric Railway, gradient 1 in 6, “Otis” Lifts, and two Staircases, 12 feet wide. The 8 main ribs or vertical girders are formed of four cruciform shaped columns. Each rib is 110 feet by 40 feet at the bottom, tapered to 10 feet by 10 feet at the top. There are 8 stages including the Lantern.

The Electric Railway would travel at 5 miles per hour, and 1,600 passengers per hour could be conveyed by it. The same installation would be used for Electric Lighting.

This Tower is provided with the usual Restaurants, Offices, Shops. There are 6 Bungalows on the 3rd stage and a Photographic room. On the 4th stage are 4 Club-houses, proposed to be let to London Clubs, with stage below. On the 5th stage, 2 large Dining or Reception Rooms to be let for private entertainments. On the 6th or top stage there are 4 look-out Bays, 1 Meteorological Room, Photographic Room, small Cafe, and a room for a Siren Foghorn to be used in conjunction with a Phonograph for advertising purposes. A powerful Electric Searchlight would be fixed in the Lantern, and a projector provided.

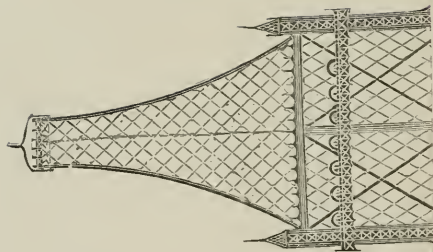
DESIGN No. 23.



"AJAX. 434,500."

J. KELLY, PYRMONT HOUSE, WINGMORE HILL, LONDON, N.

DESIGN No. 23.



J. KELLY,

Pyrmont House, Winchmore Hill,

London, N.

PARTICULARS.

Height—2,000 feet.

Base—Square (1,672 feet side), containing a superficial area of 64 acres.

Weight—25,000 tons (exclusive of lifts and machinery).

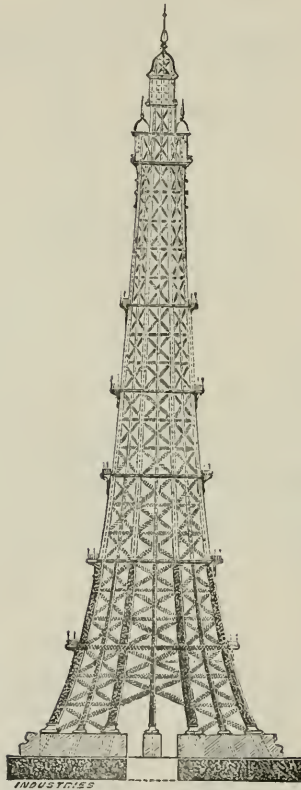
Material—Steel throughout.

Cost—(For erecting and superintendence only) £120,000.

CHIEF FEATURES CLAIMED:

The different floors are reached by **Lifts** of the simplest type, working within the open columns at the corner of each main upright. This Tower is **lighted by Electricity** generated by the same engine which works the Lifts. It is designed for the special requirements of holding several **Exhibitions** simultaneously upon the different stages.

DESIGN No. 24.



"GORDON."

A. C. CUMMINGS,
26, MAYGROVE ROAD, KILBURN, LONDON, N.W.

DESIGN No. 24.—“GORDON.”

A. C. CUMMINGS,

26, Maygrove Road, Kilburn,

London, N.W.

PARTICULARS.

Height—1,235 feet.

Weight—Not given.

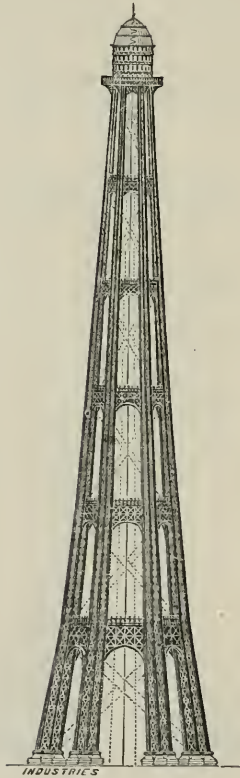
Material—Steel.

Cost—£530,000, including foundations.

CHIEF FEATURES CLAIMED:

There are **12** main columns of **Steel**, **2** inches thick at bottom, and $\frac{1}{2}$ inch at the top. The columns up to the first floor will be filled with cement and stone ballast, to add stability and rigidity to the structure. There are **8** floors or stages. **American Elevators** are provided, also the Electric **Light**.

DESIGN No. 25.



C. LEAN, M.INST.C.E.,
72, PALACE CHAMBERS, WESTMINSTER, S.W.

DESIGN No. 25.

C. LEAN, M.Inst.C.E.,

72, Palace Chambers, Westminster, S.W.

PARTICULARS.

Height—1,200 feet.

Base—Hexagonal.

Weight—Not stated.

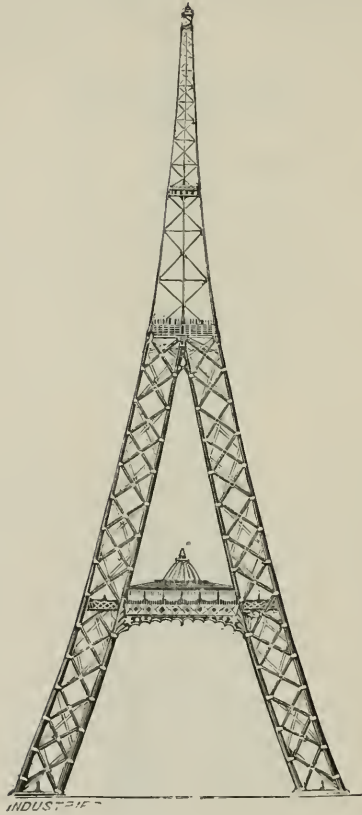
Material—Steel.

Cost—Not stated.

CHIEF FEATURES CLAIMED:

This design has been prepared to accommodate a number of comparatively small Lifts. One, two, or more can be used at a time, according to the requirements of visitors, and some can be under repair without stopping the traffic of the Tower. This Tower is divided into six lengths, and for the present it is not intended to place floors excepting on the first, third, and sixth lengths. This design has a very large diameter at the top to obtain considerable floor space. The Tower consists of 6 main columns, each of which is composed of six minor columns, the bracing of which is so formed as to leave a space in the middle of each main column for the passage of lifts, or for a staircase, waiting-rooms, &c. Hydraulic rams are introduced, as in the Eiffel Tower, to adjust for settlement of foundations. On the top floor is a building for scientific observations. It is proposed to use Lifts, and to illuminate by the Electric Light.

DESIGN No. 26.



"MAXIMUS"

T. R. THOMAS AND W. F. LEWIS,
20, PEMBROKE TERRACE, CARDIFF.

T. R. THOMAS and W. F. LEWIS,
20, Pembroke Terrace, Cardiff,

PARTICULARS.

Height—1,240 feet.

Base—Square.

Weight—18,891 tons.

Material—Steel.

Cost—£163,075, including foundations.

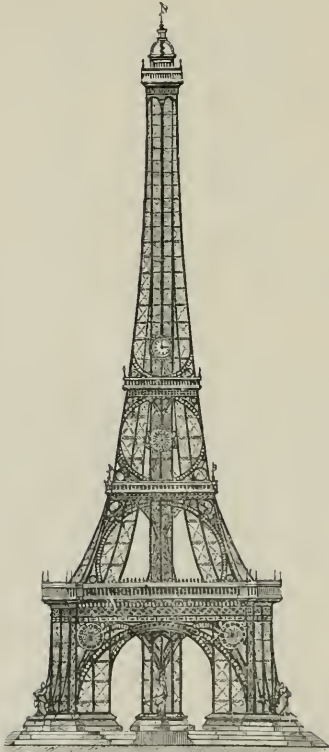
CHIEF FEATURES CLAIMED:

The foundations consist of **16 steel boxes**, in groups of **4** each. The pressure on bed plates to be not more than **3½** tons per square foot. From each of the above feet springs a circular tube of **12** feet diameter, with internal tubes and webs to gain sufficient sectional area, gradually diminishing to a single tube of **49** feet diameter at the second platform, at which point the inner tubes are terminated in a connecting cap. The structure is continued from this point to the summit in the form of **8** single tubes arranged in a square. At a height of **303** feet is a **Concert Hall**, **165** feet square, surrounded with **Shops, Hotels, &c.** At a height of **722** feet is a building, containing **12,100** square feet, for promenading. The 3rd platform is at a height of **945** feet. There are **8** lifts from bottom stage and **3** lifts above, the lower ones to be **hydraulic**, the upper ones **pneumatic**.

The lighting is by **Electricity** throughout.

A stairway is provided in each leg up to first platform and one from that to the top.

DESIGN No. 27.



P. CAMPANAKIS,
PERA MAISON SECH-HAN No. 28, CONSTANTINOPLE.

DESIGN No. 27.

P. CAMPANAKIS,

Pera Maison Sech-Han No. 28,

Constantinople.

PARTICULARS.

Height—365 metres.

Base—Triangular.

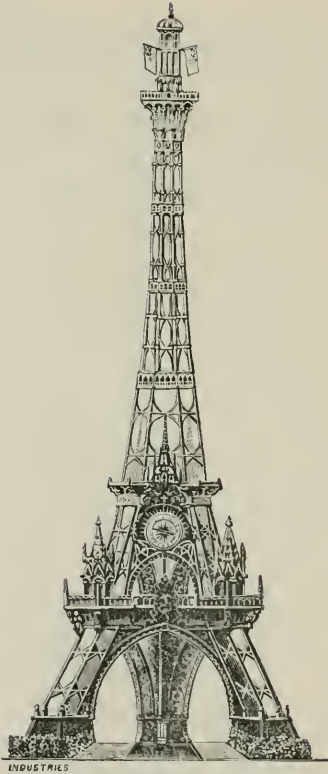
Weight—Not stated.

Material—Iron.

CHIEF FEATURES CLAIMED:

Moderate cost, great strength and stability, beautiful and original in design. There are 11 elevators.

DESIGN No. 28.



"TIME IS MONEY."

A. BRIAND,

11, RUE CORBEAU, ANZIN, NORD, FRANCE.

DESIGN No. 28.—“TIME IS MONEY.”

A. BRIAND,

11, Rue Corbeau, Anzin, Nord, France.

PARTICULARS.

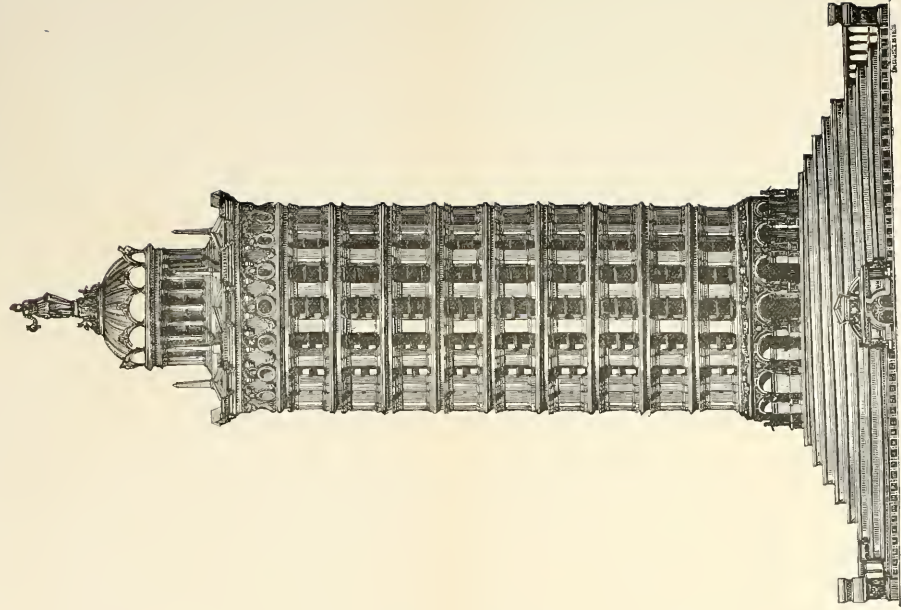
Height—1,200 feet.

Base—Triangular.

Material—Steel.

Cost—£218,000.

DESIGN No. 29.



"A.P.R."

ALBERT BRUNEL, QUAI DE PARIS, 3, ROUEN.

ALBERT BRUNEL, QUAI DE PARIS, 3, ROUEN.

DESIGN No. 29.—“A.P.B.”

ALBERT BRUNEL,

Quai de Paris, 3, Rouen.

PARTICULARS.

Height—2,296 feet.

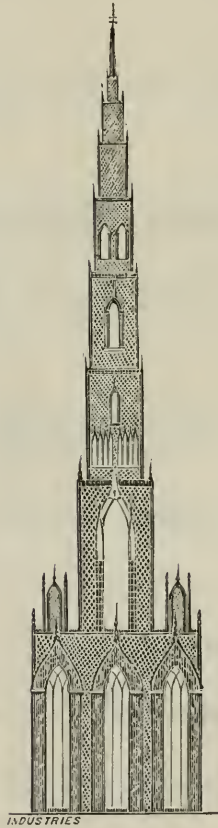
Base—Circular, 574 feet diameter.

Weight—196,702 Tons.

Material—Granite.

Cost—£1,104,325.

DESIGN No. 30.



O. C. D. ROSS, M.INST.C.E.,
15, ROLF ROAD, EAST DULWICH.

DESIGN No. 30.

O. C. D. ROSS, M.Inst.C.E.,
15, Relf Road, East Dulwich.

PARTICULARS.

Height—1,260 feet.

Weight—6,150 Tons of Cast Steel Columns. 820 Tons of
 Wrought Iron. 800 Tons of Cast Iron.

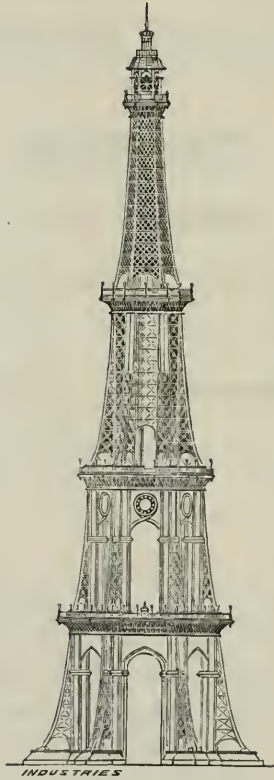
Materials—Iron and Steel.

Cost—£209,250, including Lifts and Foundations.

CHIEF FEATURES CLAIMED:

The skeleton of the Tower consists of **Cast Steel Tubes**, and it is designed to differ as much as possible from the Eiffel Tower. The **ornamentation** consists chiefly of representations of the **Rose, the Thistle and the Shamrock**. This Tower would consist of a number of parallel **Cast Steel Tubes** each **10 feet** long, placed vertically one above the other, the numbers of tubes gradually becoming less towards the top. Joints of Cast Steel Tubes, made **telescopic**. The **Electric Light** is provided, and **10 Hydraulic Lifts**.

DESIGN No. 31.



J. C. CHAPMAN,
52, ELTHORNE ROAD, HOLLOWAY, LONDON.

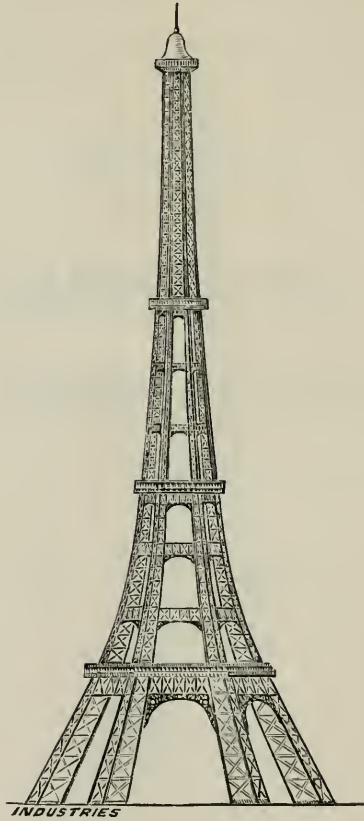
DESIGN No. 31.

J. C. CHAPMAN,

52, Elthorne Road, Holloway, London.

Height—1,200 feet.

DESIGN No. 32.



J. T. BATEMAN.

11, BEULAH ROAD WEST, THORNTON HEATH

LONDON.

DESIGN No. 32.

J. T. BATEMAN,

11, Beulah Road West, Thornton Heath,

LONDON.

PARTICULARS.

Height—1,260 feet.

Base—Hexagonal. 370 feet diameter.

Weight—9,243 $\frac{1}{2}$ tons of Metal.

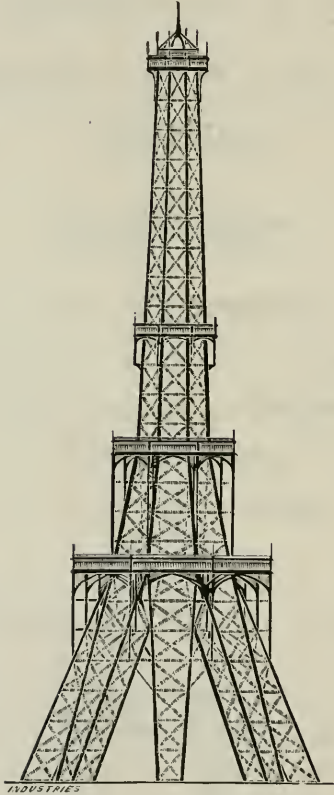
Material—Steel.

Cost—£285,278 : 14s.

CHIEF FEATURES CLAIMED:

This Tower would be divided into four stages, at the respective heights of 200, 500, 800, 1,200 feet from the ground level. No. 1 stage is 185 feet diameter. No. 2 stage 85 feet diameter. No. 3 stage 50 feet diameter. No. 4 stage 45 feet diameter, with glass dome. A gallery is provided round each of the stages 8 feet 6 inches to 10 feet wide. Lifts and Staircases are also provided. The kind of lifts is not decided, steam being proposed. Additional floors, in future, may be fixed, without interfering with the stability of structure. Electric Lighting is provided.

DESIGN No. 33.



"E."

E. DUNCAN,

3, CROSSFIELD ROAD, BELSIZE PARK, LONDON, N.W.

DESIGN No. 33.—“E.”

E. DUNCAN,
3, Crossfield Road, Belsize Park,
London, N.W.

PARTICULARS.

Height—1,218 feet.

Base—Square, of 500 feet side.

Weight—12,195 Tons of Metal.

Material—Steel.

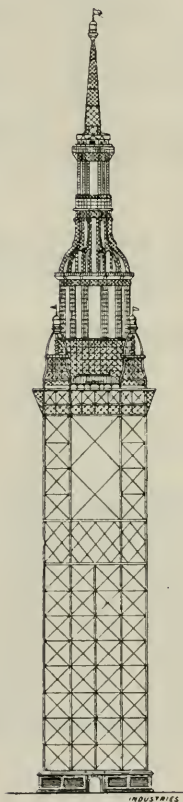
Cost—£400,000.

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CHIEF FEATURES CLAIMED:

This Tower is divided into 4 platforms. The Lifts are driven by **Electricity**, and provision is made for **Electric Lighting**.

DESIGN No. 34.



W. P. GIBSON, 15, QUEEN STREET, LONDON, E.C.

W. P. GIBSON,

15, Queen Street, London, E.C.

PARTICULARS.

Height—1,232 feet.

Base—Square.

Weight—Steel portion of Tower, 7,000 tons.

Foundation—25,000 tons.

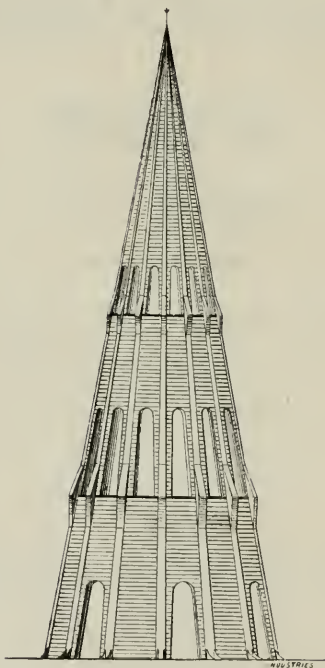
Material—Steel.

Cost—£199,500.

CHIEF FEATURES CLAIMED:

The general outline of Tower is taken from one of the finest works of Sir Christopher Wren, viz., the spire of Bow Church, Cheapside. The small amount of steel necessary allows of a low first cost, and the ample accommodation for visitors provides a large money-making capacity. This Tower contains a Theatre, Illuminated Garden, large Restaurants. There are 6 floors, and at the top a lantern having a powerful Electric Light. On the sixth floor are Bedrooms, Laboratories, Dining Room, Drawing Room, &c. In each leg of the square portion of the Tower is a large Hydraulic Lift. Staircases are also provided.

DESIGN No. 35.



“UPAS TREE OF JAVA.”

“PETERNEVOURO,”

c/o NICHOLAS C. VOURO, CONSTANTINOPLE.

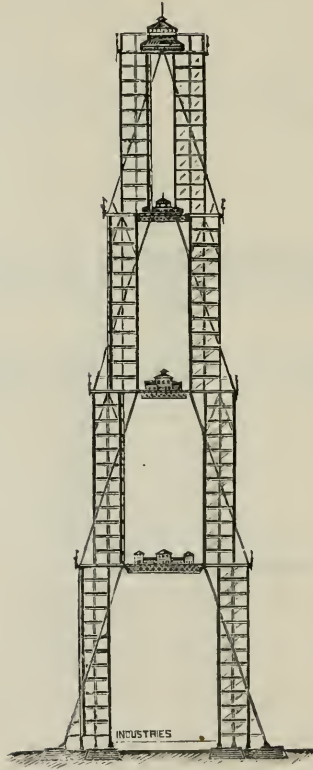
DESIGN No. 35.—“UPAS TREE OF JAVA.”

PETERNEVOURO,

c/o Nicholas C. Vouro, Constantinople.

Height—1,070 feet.

DESIGN No. 36.



SIR BRADFORD LESLIE,
TARRANGOWER, WILLESDEN LANE, LONDON, N.W.

Sir BRADFORD LESLIE,
Tarrangower, Willesden Lane,
London, N.W.

PARTICULARS.

Height—1,200 feet.

Base—Square.

Weight of structure above foundations, 30,000 tons.

Material—Cast and Wrought Iron.

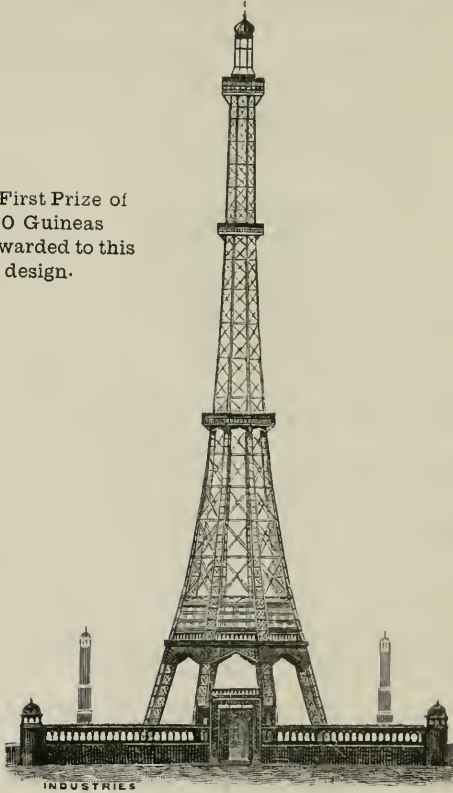
Cost—£372,266, including Foundations.

CHIEF FEATURES CLAIMED:

The main uprights of this Tower consist of four piers of cast iron columns, each 50 feet square, with a clear space at the bottom of 187 feet between them, and connected by intermediate platforms at intervals of 300 feet vertically. There are 4 main stages, having 152,340 square feet area, and there are 44 intermediate landings, giving a net area of 255,000 square feet. In each pier there is a Stairway 5 feet wide from base to summit. Two pairs of vertical balanced Hydraulic Lifts work through the two lower storeys, communicating between the ground and second floor. Two pairs of similar lifts work through the two upper storeys.

DESIGN No. 37.

The First Prize of
500 Guineas
was awarded to this
design.



A. D. STEWART, M.INST.C.E.,
2, QUEEN SQUARE PLACE, W.;

J. M. MACLAREN AND W. DUNN, A.R.I.B.A.,
21, KING WILLIAM STREET, STRAND, W.C.

A. D. STEWART, M.Inst.C.E.,
2, Queen Square Place, W.;

J. M. MACLAREN, A.R.I.B.A., and
W. DUNN, A.R.I.B.A.,
21, King William St., Strand, W.C.

PARTICULARS.

Height—1,200 feet.

Base—Octagonal, 300 feet diameter.

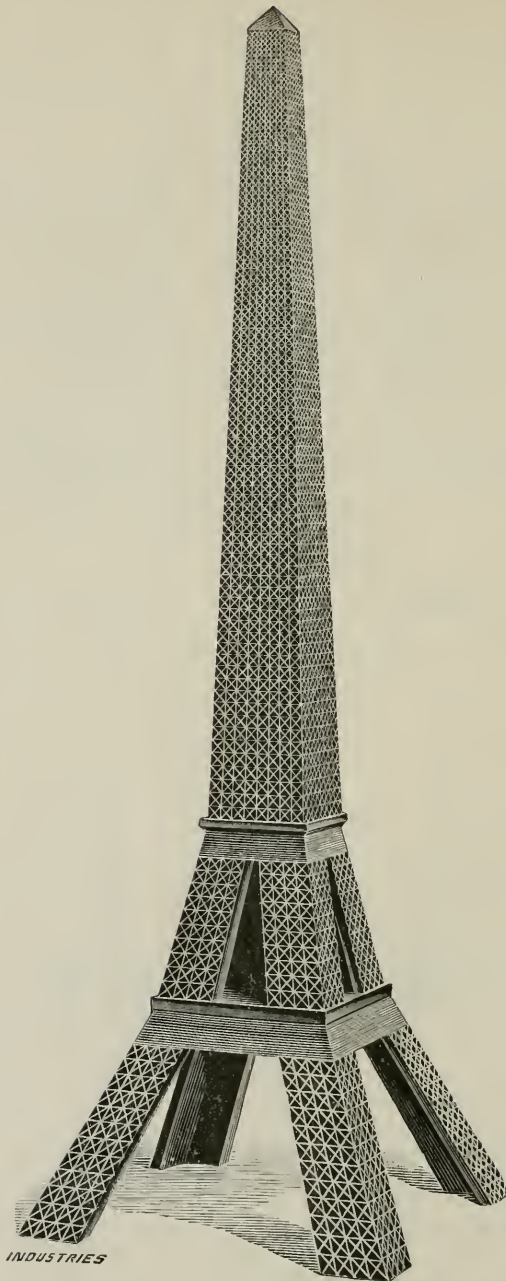
Weight—14,659 tons.

Material—Steel.

Cost—£352,222.

CHIEF FEATURES CLAIMED:

The plan being octagonal, the greatest stability with economy is obtained. An octagon affords a nearly equal resistance to bending in all directions. This plan admits of equally favourable views from all sides, and gives a sufficient variety of light and shade on its faces. The style adopted is of Oriental character. Four Lifts are provided up to the first stage, and 2 staircases situated in the legs of the Tower. The principal stage is 200 feet above the ground, and contains a large Central Hall, of octagonal form, 20,000 square feet area, and 60 feet high. Around the platform is a balcony. An Hotel with 90 bedrooms is provided. The walling is formed of 3 thicknesses of plaster on wire netting fixed to iron studding forming 2 distinct air spaces. The Floors to be of concrete and steel. A Covered Hall 10,000 square feet area is on the second stage; 3 lifts are provided from the first stage upwards, with other accommodation, such as Restaurants, &c., &c. It is intended to be lighted by Electricity.



A. F. HILLS,
THAMES IRONWORKS AND SHIPBUILDING CO., LD.,
ORCHARD YARD, BLACKWALL.

DESIGN No. 38.

A. F. HILLS,

Thames Iron Works and Shipbuilding
Co., Ltd.,
Orchard Yard, Blackwall.

PARTICULARS.

Height—2,007 feet.

Base—644 feet square.

Weight—32,000 tons.

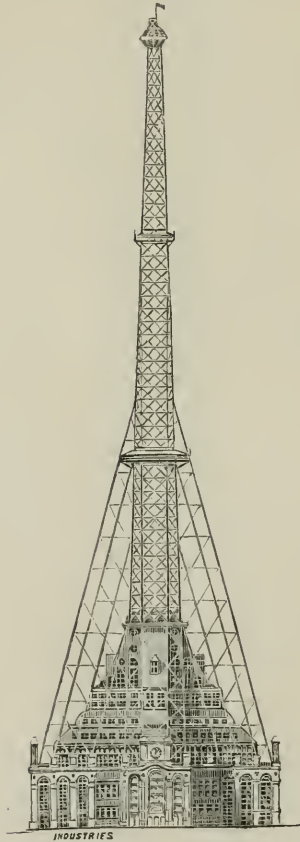
Material—Steel throughout.

Cost—£525,000, including foundations.

CHIEF FEATURES CLAIMED:

The type selected is the Monoliths of Ancient Egypt. This Tower is constructed out of small parts symmetrically arranged, which is a less costly and more convenient method than adopting gigantic parts. The intention of this design is to provide for an aerial colony, and on the **First** stage has a garden, in which might be held **Flower and Fruit Shows, Concerts, with Restaurants and a Balcony.** The **Second** Stage, 660 feet from the ground, contains a **Theatre.** On the **Third** Stage is a **Museum, Library, and Picture Galleries.** On the **Fourth** Floor is a **Temple.** Then come the **Asian, European, African and American Courts, and International Stores.** After this comes the **Residential** part of the Tower, *viz:* **The Hotel, and a Club, also Mansions, Flats, and Chambers,** the smokeless, fogless atmosphere of which should command a rent proportionate to their Alpine altitude. At the summit of the Tower is an **Observatory 1,960 feet** from the ground, which is a reproduction of the Great Pyramid, reduced one-twelfth scale. The Lifts are worked by electricity. The heating of the different rooms is effected by **Electricity.** Stairways are provided.

DESIGN No. 39.



JOHN HEATH, 16, FURNIVAL'S INN, LONDON, E.C.

DESIGN No. 39.

JOHN HEATH,
16, Furnival's Inn, London, E.C.

PARTICULARS.

Height—1,300 feet.

Base—Cruciform. Extreme dimensions of foundation,
500 feet.

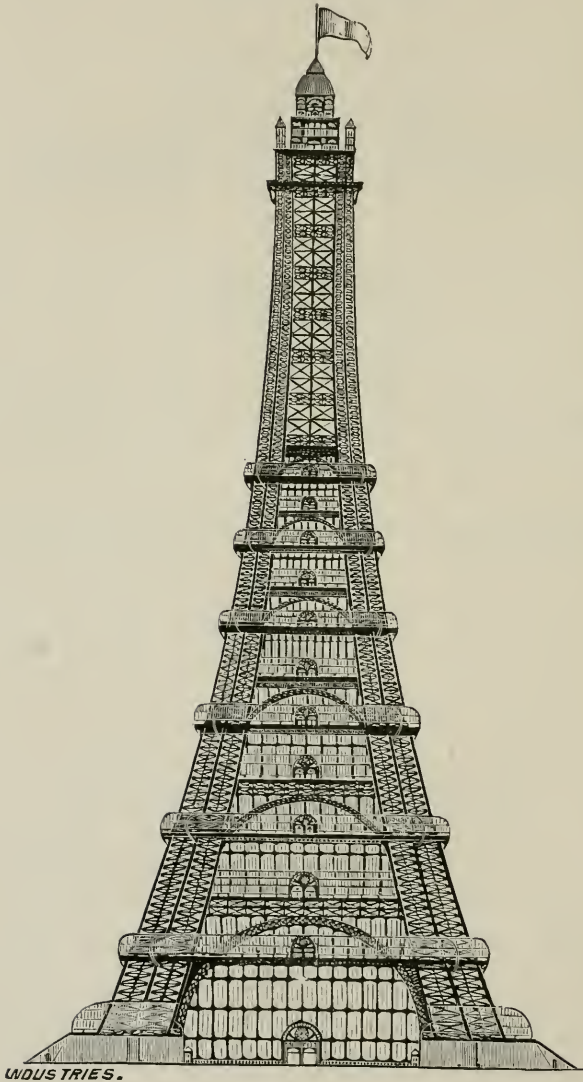
Materials—Steel, cast iron, Portland stone, glass, lead,
and zinc.

Cost—£500,000.

CHIEF FEATURES CLAIMED:

The Ground Floor contains a **Large Hall**, 100 feet high, having **6 tiers of Galleries**, around which is an **inclined Promenade** 30 feet wide, with a gradient of **1 in 15**, opening on to a **Promenade** of two acres, 100 feet high. This **Hall** provides seats for **4,000** people, and standing or promenade space of **4,000** square yards. **Ten perpendicular Lifts** are provided, and **two Special Lifts**, each to convey a carriage and pair of horses to the Promenade **100** feet high.

DESIGN No. 40.



"ARDUA TENDO."

LLEWELYN CAMPBELL,
26, BUDGE ROW, CANNON STREET, LONDON.

DESIGN No. 40. ("ARdua TENDo.")

LLEWELYN CAMPBELL,
26, Budge Row, Cannon Street,
London.

PARTICULARS.

Height—1,670 feet.

Base—Area 275,625 square feet.

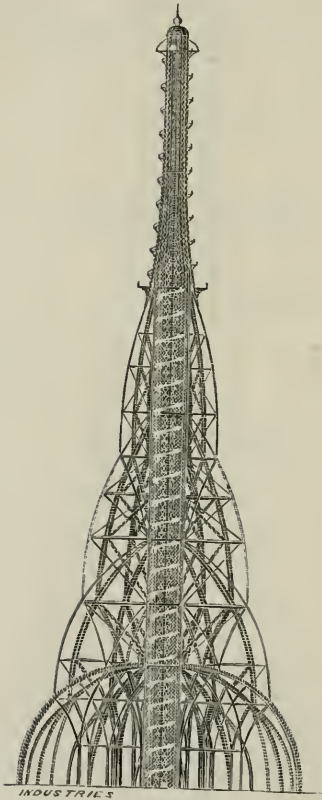
Material—Steel.

Cost—£1,300,000 would be the complete outlay, excepting the Site.

CHIEF FEATURES CLAIMED:

This Tower is eminently adapted for the purposes of Education, Amusement, and Refreshment. It has an absolutely free and unencumbered area (except where lifts and stairs occur) of the whole of each floor, which enables the space to be adapted for a Theatre, Concert Hall and Exhibitions, with a Circus on the Ground Floor.

DESIGN No. 41.



J. TERTIUS WOOD, F.G.S., ROCHDALE.

DESIGN No. 41.

J. TERTIUS WOOD, F.G.S.,

Rochdale.

PARTICULARS.

Height—1,225 feet.

Base—Circular, 450 feet diameter.

Weight—About 12,000 tons.

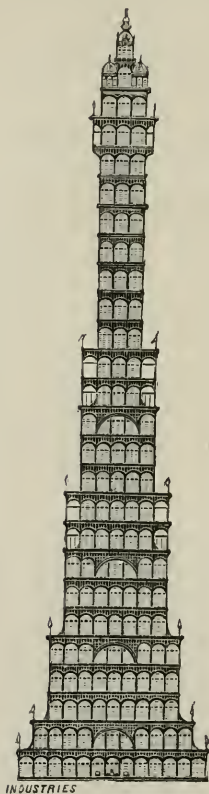
Material—Bessemer Steel.

Cost £313,789 10s., including foundation.

CHIEF FEATURES CLAIMED:

The **Lifts** are placed in a centrally situated column. By adopting such a plan, the moments of force and load are central balanced, simple, and cannot, even theoretically, disturb the equilibrium of the Tower. This design offers little space upon which the wind can act without breaking its own force. The Tower consists of a series of **Domes**. The bottom one may be glazed to form a "**Winter Garden**." There is a **Spiral** up to the full height up which visitors may pass. It is proposed to train mules to carry people up the spiral incline. Provision is made for **Lighting** this Tower by **Electricity**.

DESIGN No. 42.



"UTILITY."

PHILIP E. MASEY, HOPE VILLA, HAROLD STREET,
LOUGHBOROUGH ROAD, LONDON.

DESIGN No. 42. ("UTILITY.")

PHILIP E. MASEY,
Hope Villa, Harold Street,
Loughborough Road, London.

PARTICULARS.

Height—1,400 feet.

Base—325 feet square.

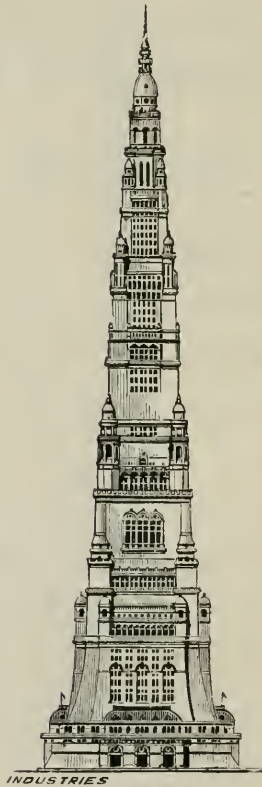
Materials—Cast Iron and Glass.

Cost—£130,000.

CHIEF FEATURES CLAIMED:

The elements of the design are those common in Rome, invented some 2,000 years ago. The Tower could be built in 9 months. Being of **Cast Iron**, it is cheaper than Steel, and better suited to glazing. There are **24** floors, which would be constructed of Wrought Iron and Portland Cement. The Foundation would be a bed of Concrete, **10** feet thick. The least diameter of the Main Shaft is **75** feet. It is proposed to hold **Exhibitions** on this Tower, to have **Bachelors' Chambers, Restaurants, Shops, Flower Beds and Fountains.** There would be **3** double **Elevators.** It is suggested that there should be **400** Rooms at a rental of **£25** per annum, which would produce **£10,000** a year.

DESIGN No. 43.



"NELOAH."

224, STOCKWELL ROAD, LONDON, S.W.

DESIGN No. 43.

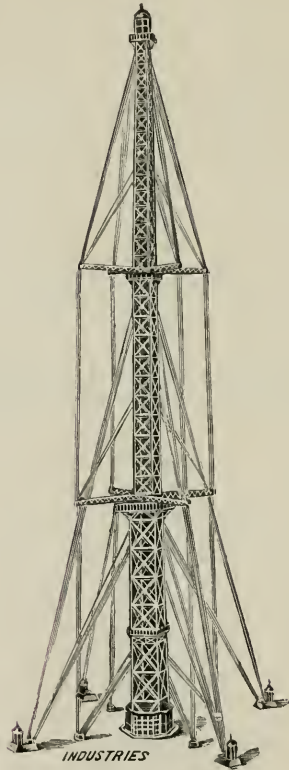
"NELOAH,"

224, Stockwell Road, London, S.W.

Height—1,200 feet.

To be built in Concrete.

DESIGN No. 44.



“AD CÆLUM JUSSERIS IBIT.”

C. E. FINDLAY, M.I.C.E., W. S. RENDEL, M.I.C.E.,
AND HALSEY RICARDO,
8, GREAT GEORGE STREET, WESTMINSTER, S.W.

DESIGN No. 44. ("AD CÆLUM JUSSERIS IBIT.")

C. E. FINDLAY, M.I.C.E.,

W. S. RENDEL, M.I.C.E.,

HALSEY RICARDO,

8, Great George St., Westminster, S.W.

PARTICULARS.

Height—1,200 feet.

Weight—3,256 Tons in Mast, Ropes, and Cast Iron pieces.

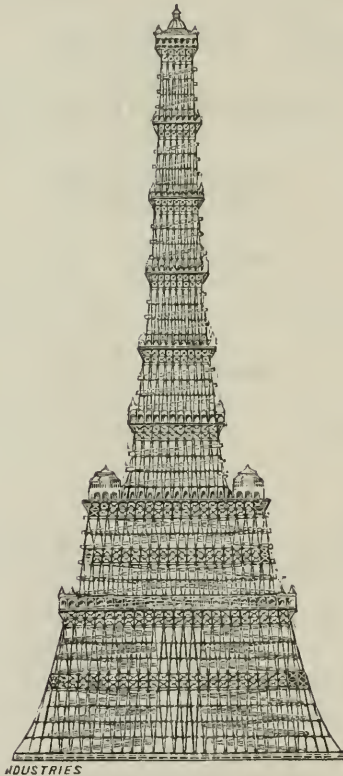
Material—Steel.

Cost—£155,080, including Foundations.

CHIEF FEATURES CLAIMED:

This Tower consists of a **Central Mast**, stayed against flexure by Wire Ropes. **Balconies**, providing space for **Promenades, Restaurants and Stalls** are constructed at the heights **400 feet** and **600 feet** from the ground. These balconies are reached by **Staircases** fixed outside the Mast, in addition to which are **4 Hydraulic Lifts** working within the Mast. The **reduction of material** in this Tower reduces the cost of maintenance, reduces the cost and extent of foundations. Should it be desired to remove this Tower, it could be done with the greatest facility in the course of **six weeks**. It is proposed to illuminate the Mast by **Electric Light**.

DESIGN No. 45



THEODORE SINGTON (ARCHITECT),
17, DICKENSON STREET, MANCHESTER.

THEODORE SINGTON, (Architect),
17, Dickenson Street, Manchester.

PARTICULARS.

Height—1,200 feet.

Base—215 feet square at base, and 50 feet square at top platform.

Weight—9,250 Tons of Steel.

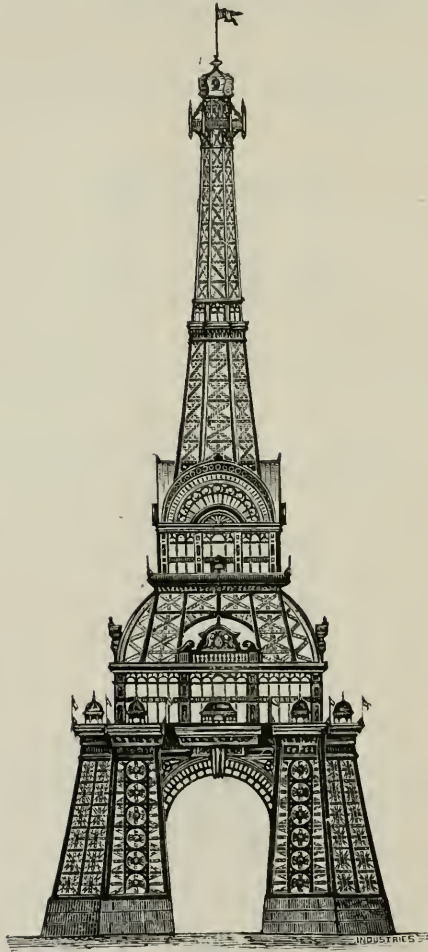
Material—Steel.

Cost—£330,000.

CHIEF FEATURES CLAIMED:

This design has been developed from an idea taken from the Tower of **ÂTESH-GÂH** at **FIRÛZABAD**. In addition to **Inclined Balconies**, it is proposed to provide **Lifts**. This Tower would be **Lighted** by the **Electric Light**.

DESIGN No. 46.



ROBERT WYLIE, 6, LORD STREET, LIVERPOOL.

DESIGN No. 46.

ROBERT WYLIE,

6, Lord Street, Liverpool.

PARTICULARS.

Height—1,470 feet.

Base—Stone, faced with Granite. Area enclosed, 40,000 square yards.

Weight—Of Steel, 10,260 tons.

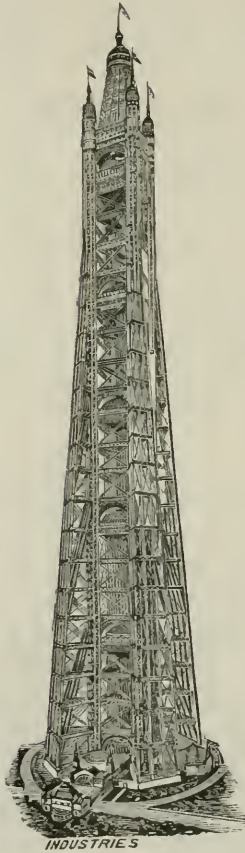
Material—Chiefly Steel.

Cost—£330,000.

CHIEF FEATURES CLAIMED:

The Stone Base includes Racquet and Tennis Courts. Refreshment, Waiting Rooms, &c. First Floor is 344 feet above the Ground, and is the Main Promenade. On this stage is the principal Pavilion, comprising two floors, the upper floor being intended as a Concert Room. On the 3rd floor is the Upper Pavilion, with an external prospect gallery. This Pavilion also has two floors, the lower one being divided into Dining and Refreshment Rooms, the upper one being specially adapted for a Floral Hall and Exhibitions. The 5th floor is enclosed, and placed at 1,010 feet above the ground, and the 6th floor is 1,348 feet above the ground, and is surrounded by a gallery. The Cupola then commences, which contains the top floor, at 1,400 feet above the ground. 4 Large Hydraulic Lifts are employed, and, in addition, 4 Stairways are provided to the level of the Floral Hall, above which 2 Stairways reach to the top floor. The Lighting is by Electricity.

DESIGN No. 47.



"ACME."

WALFORD AND WORMALD,
110, BUCKINGHAM PALACE ROAD. LONDON.

DESIGN No. 47. ("ACME.")

WALFORD & WORMALD,
110, Buckingham Palace Rd., London.

PARTICULARS.

Height—1,300 feet.

Base—Square; 33,000 square feet.

Weight—Of Steel, 7,890 Tons.

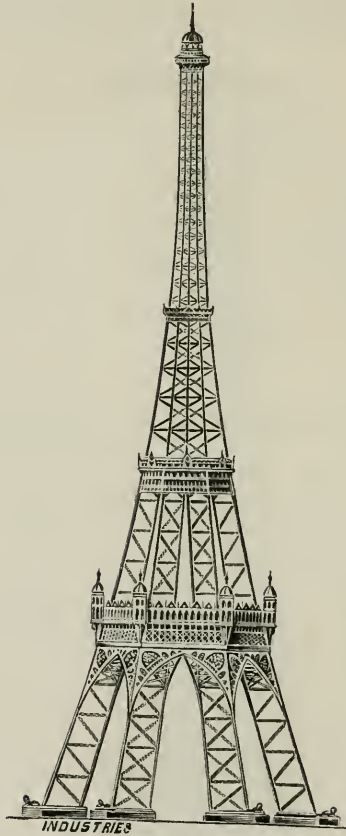
Materials—Steel, and Cast Iron Base Plates.

Cost—£279,121.

CHIEF FEATURES CLAIMED:

This Tower consists of four principal Shafts, one at each angle of the square, and contains **Basement, Ground,** and **5 Supplementary Floors**, the uppermost being 1,000 feet above the ground level. The Basement is utilized for boilers, &c. The Ground Floor, containing 33,000 superficial feet, is laid out as a **Winter Garden**; other uses are made of this floor. The next floor, viz., that at the 200 feet stage contains 9,000 square feet, and may be appropriated in the following manner: A **Grand Buffet and Orchestra** around the **Central Staircases**. **Coffee and Dining Saloon** of 1,200 superficial feet. **Smoking and Billiard Room**, 1,200 superficial feet. Two open bays on to Galleries off the Central Promenade, each containing 500 superficial feet. **Photographic Gallery, Writing Room, Post and Telegraph Office, &c., &c.** The Grand Stage at 1,000 feet high contains 10,300 superficial feet, and the Lifts terminate at this height; above this is an **Outside Gallery**, and beyond again is the **Electric Globe**. The **Staircases** will be independent for ascent and descent.

DESIGN No. 48.



EWEN HARPER AND J. A. H. HARPER, AND JOHN
GRAHAM, 57, COLMORE ROW, BIRMINGHAM.

EWEN HARPER, J. A. H. HARPER,
and JOHN GRAHAM, C.E.,
57, Colmore Row, Birmingham.

PARTICULARS.

Height—1,300 feet.

Base—Six-pointed Star. Minimum Width, 400 feet.

Weight—9,264 Tons, exclusive of Foundations.

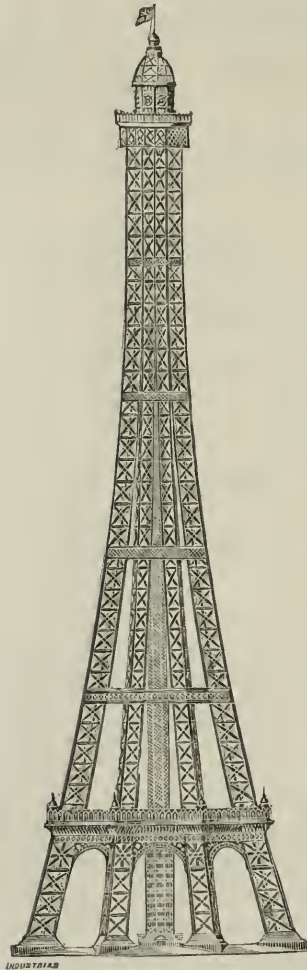
Material—Steel.

Cost—£247,450.

CHIEF FEATURES CLAIMED:

The Lifts work directly up the centre of Tower. A copy of the French Tower has been avoided. **Strength** and **Economy** are combined so as to be attractive architecturally, as well as being a work of practical Engineering. There are 4 Stages or Platforms, as follows:—No. 1, 300 feet high, 35,000 square feet; No. 2, 500 feet high, 16,750 square feet; No. 3, 800 feet high, 4,250 square feet; No. 4, 1,200 feet high, 3,780 square feet. The floors are composed of $\frac{3}{8}$ in. steel arched plates, with a layer of concrete 3 in. thick; weight 28lbs. per square foot, over the whole area of floor. It is proposed to use Lifts to be worked by Hydraulic Power. Electric Light is provided.

DESIGN No. 49.



WYNDHAM VAUGHAN, C.E.,
WILLIAM H. TOMKINS, A.M.I.C.E.,
64, BROAD STREET AVENUE, LONDON, E.C.

DESIGN No. 49.

WYNDHAM VAUGHAN, C.E.,
WILLIAM H. TOMKINS, A.M.I.C.E.,
64, Broad Street Avenue, London, E.C.

PARTICULARS.

Height—1,500 feet.

Base—Octagonal; the largest diameter being 500 feet the top of Tower being 90 feet diameter.

Weight—Total weight of metal, 16,747 tons.

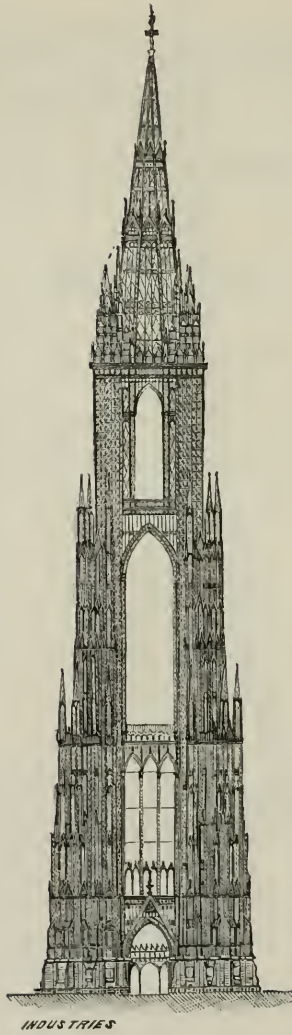
Material—Steel.

Cost—Not given.

CHIEF FEATURES CLAIMED:

The skeleton is **Octagonal**, consisting of **8 triangular columns**, each consisting of **3 tubes**, with lattice bracing. There are **3 floors**, the main floor being **216 feet** above ground, with an area of **90,746 square feet**. The **Second**, **432 feet** above the ground, of **31,400 square feet**. The **Third**, at a height of **1,360 feet** above ground, having an area of **11,309 square feet**. There is also a floor in the campanile, with a small balcony round the lantern. **Stairs** and **Steam Lifts** are provided.

DESIGN No. 50.



MAX AM ENDE, 5, VICTORIA STREET, S.W.

DESIGN No. 50.

MAX AM ENDE,
5, Victoria Street, S.W.

PARTICULARS.

Height—1,550 feet.

Base—Square.

Weight—Dead weight of Tower at base of steel structure, 16,053 tons ; total amount of steel, 10,849 tons ; total amount of steel in platforms, 2,617 tons.

Material—Steel.

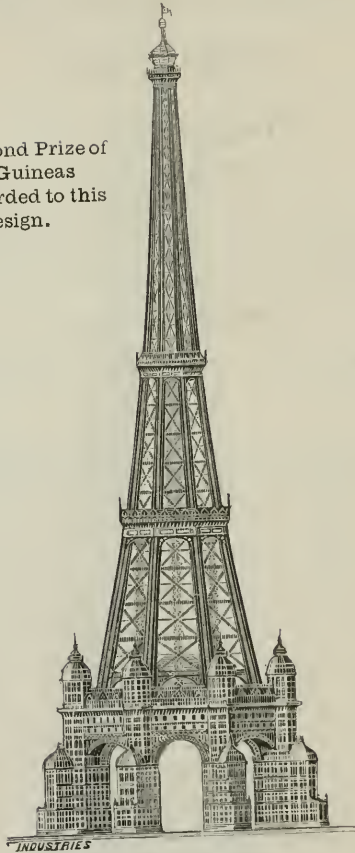
Cost—£674,592, including foundations.

CHIEF FEATURES CLAIMED.

This Tower is of **Gothic** design, with **5** platforms—**1,320** feet, **1,200** feet, **1,000** feet, **780** feet, and **400** feet above the ground level. This Tower would be a monument of the progress in iron and steel manufacture and engineering industry. It is proposed that the thickness of steel in all supporting parts should not be less than $\frac{3}{8}$ inch. No cast iron or steel castings will be used in this Tower. The **1,000** feet platform is the most spacious and has an open balcony. Foot-paths, **1** in **9**, as well as **lifts** are provided. The **Lifts** resemble ordinary means of locomotion, and consist of a **Spiral Railway**, worked by **steam**. The diameter of the spiral is **21** feet **10** $\frac{1}{2}$ inches, and the pitch is **12** feet **6** inches, the gradient is therefore **1** in **5** $\frac{1}{2}$. There are not less than **8** **Railway Carriages**, or more than **40**. A **1st** class carriage contains **10** seats, **2nd** class **11**, **3rd** class **12**. **Electric Lighting** is provided.

DESIGN No. 51.

The Second Prize of
250 Guineas
was awarded to this
Design.



JOHN J. WEBSTER M.I.C.E., AND T. W. HAIGH,
67, LORD STREET, LIVERPOOL.

DESIGN No. 51.

JOHN J. WEBSTER, M.Inst.C.E.

T. W. HAIGH,

67, Lord Street, Liverpool.

PARTICULARS.

Height—1,300 feet.

Base—Octagonal ; diameter, 470 feet.

Weight—of metal 8,820 tons.

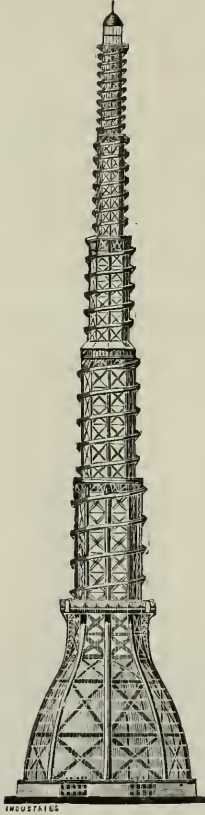
Material—Steel.

Cost —£399,638, exclusive of foundations.

CHIEF FEATURES CLAIMED :

The form is **Octagonal** and being a near approach to a circle the resistance of the wind is reduced to a minimum. The stability of structure is uniform for any direction of wind. It occupies a minimum space on the ground, and is economical in construction. Height of 1st platform from ground, **200 feet** ; 2nd, **500 feet** ; 3rd, **750 feet** ; 4th, **1,215 feet** ; **Lantern Gallery, 1,250** ; **Crow's Nest, 1,300**. The building is adapted for **Hotels, Restaurants, Residential flats, Offices, Warehouses, Stores, &c., Concerts,** and other entertainments. **3,000** people can be comfortably seated on 1st platform, leaving a broad promenade round the seats. In addition to lifts, access to every platform and every floor in the base buildings can be made by a convenient **staircase** and stairway provided up to the **4th** floor. As an alternative, a **spiral footway** is proposed. The bottom lengths of the vertical columns are filled with ballast to obtain the necessary stability in the most economical manner. Holding down bolts are also adopted. The lighting is by **Electricity**. The rents would ensure a handsome dividend on an expenditure of **£450,000**.

DESIGN No. 52.

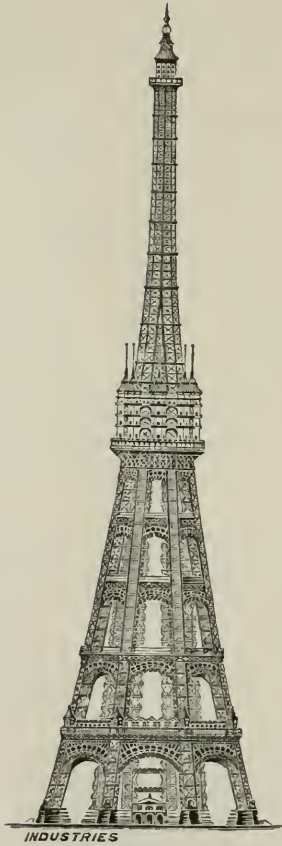


W. S. RENDEL, M.I.C.E., C. F. FINDLAY, M.I.C.E.,
AND HALSEY RICARDO,
8, GREAT GEORGE STREET, WESTMINSTER, S.W.

DESIGN No. 52.W. S. RENDLE, M.Inst.C.E.,C. F. FINDLAY, M.Inst.C.E.,HALSEY RICARDO,8, Great George Street, Westminster,London, S.W.PARTICULARS.**Height**—1,260 feet.**Base**—Octagonal, occupying 46,000 square feet.**Weight**—Steel, 9,628 tons; Iron, 850 tons.**Material**—Steel.**Cost**—£388,500.CHIEF FEATURES CLAIMED:

The base of this Tower is used as a **Winter Garden** with a dome roof, and a floor area of **46,000** square feet, and a **Promenade** round the Dome at a height of **25** feet from the ground, under which is a **Promenade with Shops, Restaurants, &c.** The **Lifts** convey passengers to the first floor, which is **304** feet from the ground, and contains a floor area of **16,240** square feet. The remaining height is divided into **two** stages by a gallery, **712** feet from the ground, containing **5,300** square feet; both it and the lantern at the top are reached by **hydraulic lifts** inside the hollow octagon forming the Tower. In addition to the lifts access would be gained to the various stages by an **inclined plane**, which descends from the summit spirally on the outside of the Tower, about a **mile and a half** in length, with a gradient of **1 in 8**. The lighting is by **Electricity**.

DESIGN No. 53.



FRANCIS FOX, M.Inst.C.E., AND GEORGE E.
GRAYSON, 31, JAMES STREET, LIVERPOOL.

DESIGN No. 53.

FRANCIS FOX, M.Inst.C.E.,

GEORGE E. GRAYSON,

31, James Street, Liverpool.

PARTICULARS.

Height—1,300 feet.

Base—Double octagonal, 370 feet diameter.

Weight—10,200 tons.

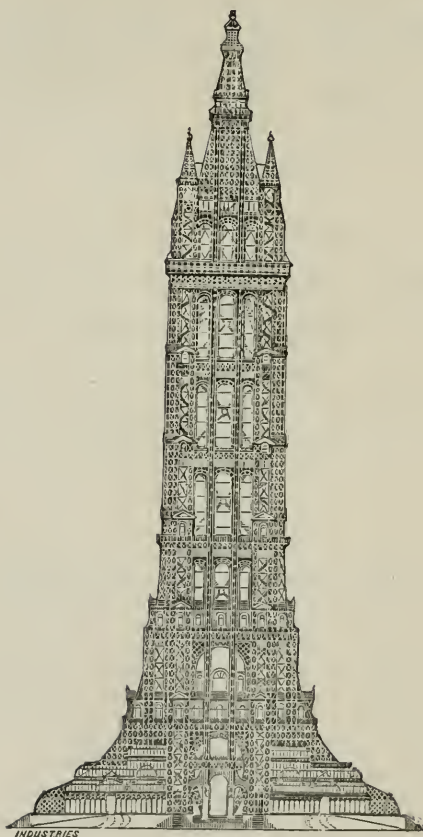
Material—Steel.

Cost—About £300,000, exclusive of the Concert Hall and fitting up of Restaurants.

CHIEF FEATURES CLAIMED:

The main skeleton consists of 16 lattice columns, each 20 feet square. The top platform is 50 feet diameter at an altitude of 1,200 feet. There are 6 galleries. An inclined spiral roadway is provided from the ground level to the first gallery. Lifts are proposed. The design combines stability with economy. The curve of the Tower from the ground upwards is parabolic, being the best to resist the wind pressure. The design offers the smallest possible resistance to the wind, so that the resultant force due to the weight of structure falls within the base. This Tower contains a Concert Hall, and Sanatorium formed by a number of rooms above the fifth platform, and is lighted by Electricity.

DESIGN No. 54.



J. SINCLAIR FAIRFAX (ENGINEER AND ARCHITECT),
433, STRAND, LONDON.

DESIGN No. 54.

J. SINCLAIR FAIRFAX,

Engineer and Architect, 433, Strand,

London.

PARTICULARS.

Height—1,296 feet.

Base—576 feet wide.

Weight--Of steel work, 34,200 tons.

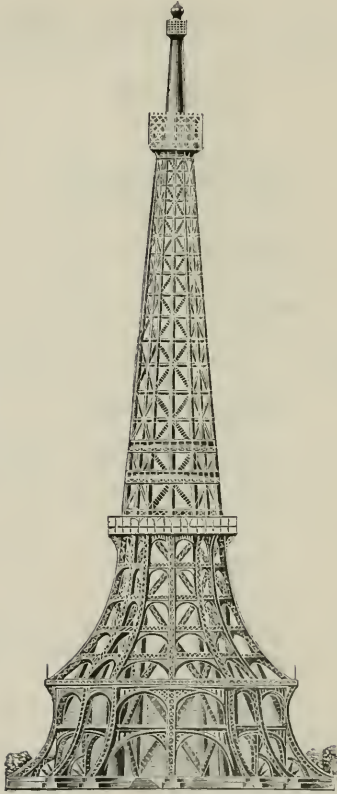
Material—Steel.

Cost—£567,880, exclusive of cost of superintendence, &c.,
estimated at 5 per cent.

CHIEF FEATURES CLAIMED:

There is a clear open space within this Tower of 96 feet square, which extends from the ground to a height of 840 feet above, where it is contracted to 16 feet square. Consequently it is possible to swing a pendulum freely from a fixed point 1,296 feet above the earth. There are 10 floors above ground. **Steam Lifts** and **Stairways** are provided. This Tower has been designed to accommodate a large number or people at the high levels of 840 and 960 feet above ground. **The lighting is by Electricity.**

DESIGN No. 55.



INDUSTRIES

HENRY DAVEY 3, PRINCESS STREET, WESTMINSTER.

DESIGN No. 55.

HENRY DAVEY,
3, Princess Street, Westminster.

PARTICULARS.

Height—1,250 feet.

Base—Hexagonal.

Weight—8,000 Tons of Steel.

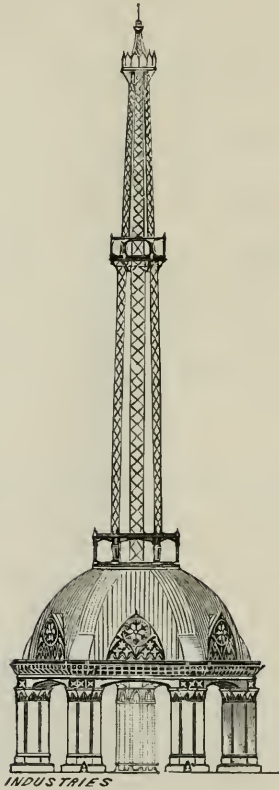
Material—Steel.

Cost—£321,000.

CHIEF FEATURES CLAIMED:

The **Skeleton** consists of 12 main tubes braced together, each corded at base with 4,000 tons of Masonry. The base is utilised as a **Winter Garden**. **Staircases** and **Hydraulic Lifts** are provided. The structure takes the form of a **Spire** above the **1st Stage**, which is at a height of 380 feet from the ground. The ground floor or **Winter Garden** contains 70,000 square feet area. The **Lighting** is by **Electricity**. There are 2 stages, one 380 feet from the ground, the other 980 feet. At the first stage there are 3 floors, giving a total area 58,000 square feet. At the second stage there are 4 floors, giving a total of 14,000 square feet. The **Ball** is reached by a **Staircase**, and is 1,250 feet above the ground.

DESIGN No. 56.



W. HEMINGWAY, 9, CAWOOD TERRACE, DAWES ROAD,
WALHAM GREEN, LONDON.

DESIGN No. 56.

W. HEMINGWAY,

9, Cawood Terr., Dawes Road, Walham
Green, London.

PARTICULARS.

Height—1,200 feet.

Base—Hexagonal, and Triangular above the Dome.

Weight—29,891 Tons of Metal (Steel, Cast and Wrought Iron).

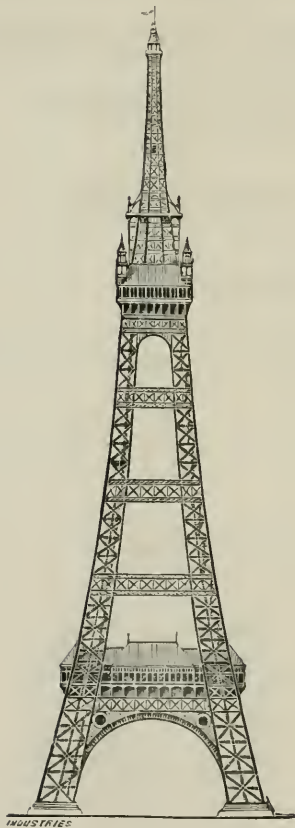
Material—Steel.

Cost—£400,554.

CHIEF FEATURES CLAIMED:

Simplicity of Construction and Facility of Erection. The triangular form of Spire offers the minimum amount of resistance to the wind pressure. It is proposed to use the Main Hall for Concerts, Banquets, &c.

DESIGN No. 57.



R. J. G. READ, AND L. A. SHUFFREY,
38, WELBECK STREET, LONDON, W.

DESIGN No. 57.

R. J. G. READ, L. A. SHUFFREY,
38, Welbeck Street, London, W.

PARTICULARS.

Height—1,250 feet.

Base—Square, with Octagonal Spire above.

Weight—Weight of Metal, 7,600 Tons.

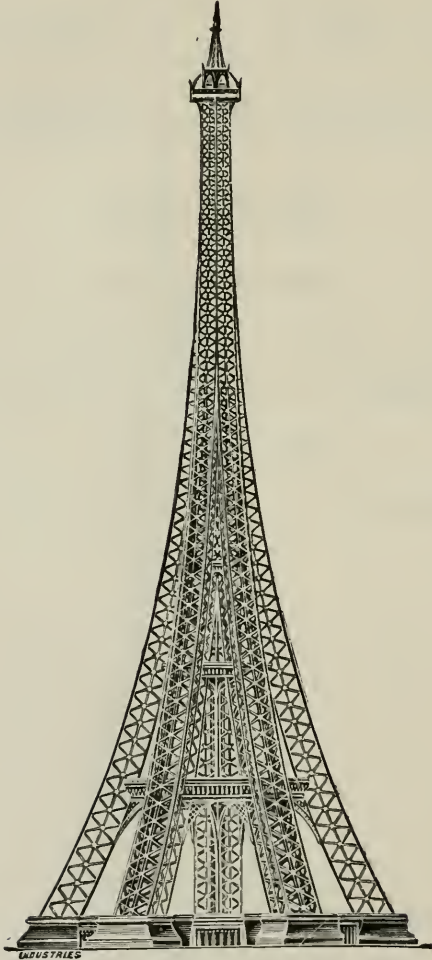
Material—Steel.

Cost—£390,673, including Foundations.

CHIEF FEATURES CLAIMED :

This Tower rests upon 16 pillars, forming the legs, which rest on granite blocks. The main stages are two platforms at a height of 200ft. and 800ft. respectively, above the ground. On the lower stage would be large Pavilions, to be used as Restaurants, Cafes, Concert Hall, Dancing Saloon, beside Kiosks and Stalls, &c., are provided. The second floor is furnished with buildings for similar purposes. Above the 2nd stage is a Promenade Gallery. There is a 4th Platform at the top of the Spire. Hydraulic Lifts are provided. The Tower is lighted by Electricity.

DESIGN No. 58.



"EQUILATERAL TRIANGLE."

HENRY LAW & SON, 9, VICTORIA CHAMBERS,
VICTORIA STREET, LONDON.

DESIGN No. 58.—“EQUILATERAL TRIANGLE.”

HENRY LAW & SON,
9, Victoria Chambers, Victoria Street,
London.

PARTICULARS.

Height—1,475 feet.

Base—Hexagonal, covering an area of 225,880 square feet.

Weight—14,210 tons of Steel.
 2,150 tons of Wrought Iron.
 58 tons of Cast Iron.

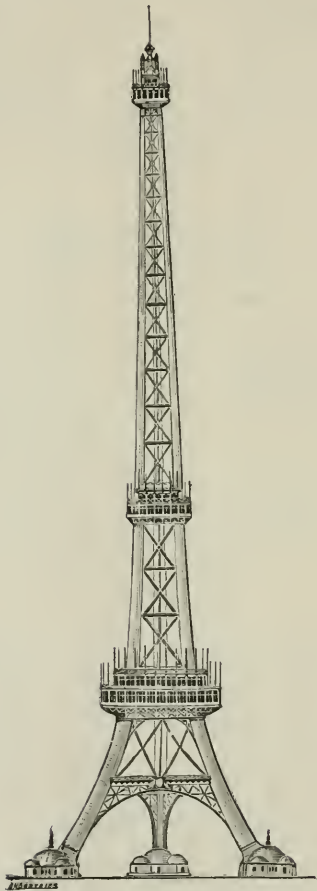
Material—Chiefly Steel.

Cost—£726,752.

CHIEF FEATURES CLAIMED:

The leading feature of this design is a central hexagonal Tower, sustained by 6 curved spurs. The maximum compressive stress upon the piers, including that produced by the wind and 40,000 persons distributed over the structure is $1\frac{1}{2}$ tons to the square foot. The Ground floor contains Entrance Hall, Restaurant and Concert Hall, area of 6,885 square feet, Terrace 68,500 square feet. First stage, 86,780 square feet. Second stage, 41,800 square feet. Third stage, 11,500 square feet. Fourth stage, 8,240 square feet. Lifts and Stairways are provided. The lifts, which are Hydraulic, are contained in the central Tower, which is divided into 6 triangular spaces to accommodate them. The speed is 360 feet per minute.

DESIGN No. 59.



"TRIPOD TOWER."

PROF. ROBERT H. SMITH, A.M.Inst.C.E.,
124, HAGLEY ROAD, BIRMINGHAM; AND
W. HENMAN, A.R.I.B.A., 38, BENNETT'S HILL,
BIRMINGHAM.

DESIGN No. 59.—“TRIPOD TOWER.”

Prof. ROBERT H. SMITH,

A.M.Inst.C.E.

W. HENMAN, A.R.I.B.A.

PARTICULARS.

Height—1,400 feet.

Base—Triangular.

Weight—Steel, Wrought Iron and Cast Iron,
11,502 tons.

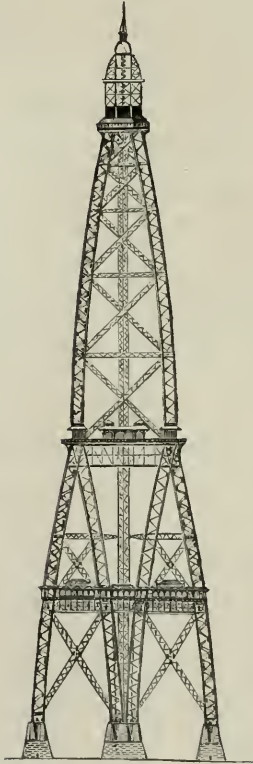
Material—Chiefly Steel.

Cost—£229,500, including foundations.

CHIEF FEATURES CLAIMED:

This Tower consists in 3 tapered Steel Tubes which at each horizontal section have their centres at the corners of an equilateral triangle. At the ground level the tubes are 30 feet diameter, and their centres are 350 feet apart. At a height of 156 feet from the ground is a gallery 12 feet wide and 500 feet long, next comes a great platform with 3 main floors and one mezzanine floor, having an aggregate area of 54,345 square feet, the lowest floor being 282 feet from the ground, above this is an intermediate two-storied platform with mezzanine floor, having a total area of 12,582 square feet, the lower floor being 585 feet above the ground. There is also a top platform of two stories and mezzanine, whose lowest floor level is 1,250 feet, with an area of 4,075 square feet. The structure terminates in a crown of bold design. Lifts and stairways are provided.

DESIGN No. 60.



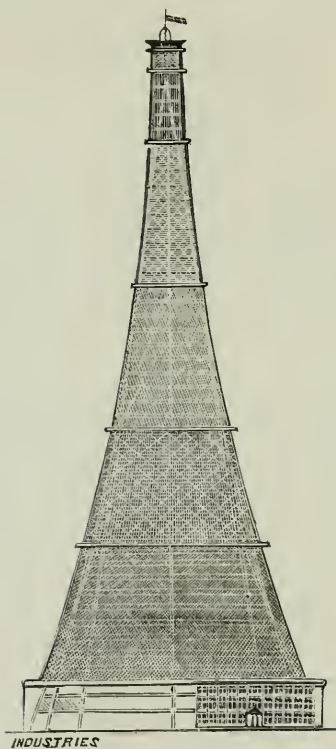
H. E. SKETCHLEY, M. INST. C. E., 5, GWENDWR ROAD,
WEST KENSINGTON.

H. E. SKETCHLEY, M.Inst.C.E.,**5, Gwendwr Road, West Kensington.****PARTICULARS.****Height**—1,264 feet.**Base**—Square.**Weight**—12,000 tons of Steel.**Material**—Chiefly Steel.**Cost**—Labour in construction, £193,263.
Labour and materials £496,154.

CHIEF FEATURES CLAIMED:

This Tower consists of two portions, the upper one being an independent Tower resting upon 4 separate lower Towers. There are 3 platforms. The main columns of the upper portion are 16 in number in 4 sets of 4 each, and are octagonal in section. The 1st platform is 264 feet from the ground, and is 275 feet square, with an area of 8,400 square yards. The 2nd platform is at a height of 528 feet from the ground, and is 209 feet square, having an area of 3,650 square yards. The 3rd platform is 1,048 feet from the ground and is octagonal in shape, measuring 86 feet across, with an area of 680 square yards. Above this is an upper floor, also octagonal, containing 330 square yards, surrounded by a gallery which can be used for scientific purposes. Lifts and Staircases are provided, and the Tower is lighted with Electricity.

DESIGN No. 61.



"TRIPOD."

THOMAS W. PLANT AND JAMES S. FLEMING,
85, GRACECHURCH STREET, LONDON, E.C.

DESIGN No. 61. "TRIPOD."

THOMAS W. PLANT,

JAMES S. FLEMING,

85, Gracechurch Street, London, E.C.

PARTICULARS.

Height—1,200 feet.

Base—Triangular.

Weight—Of metal, 6,278 tons.

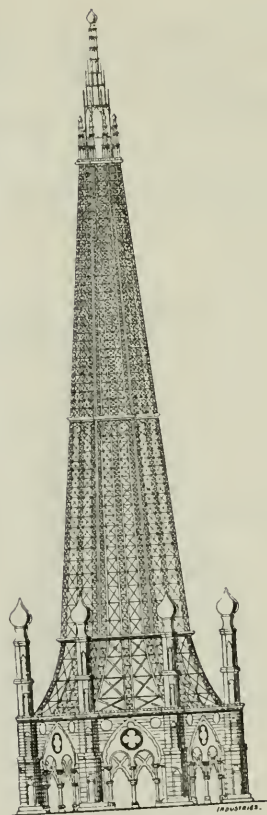
Material—Steel.

Cost—£234,050, exclusive of foundations.

CHIEF FEATURES CLAIMED

The base is of the "Tripod" form, selected for its great resistance to wind pressure. It measures 320 feet between the feet at base. Lifts and Staircases are provided. Lighting by Electricity is proposed.

DESIGN No. 62.



"EXCELSIOR," "FLECTI NON FRANGI."
J. MILNE WATT, 132, WELLINGTON STREET, GLASGOW.

DESIGN No. 62. "EXCELSIOR." "FLECTI NON FRANGI."

J. MILNE WATT,

132, Wellington Street, Glasgow.

PARTICULARS.

Height—1,200 feet.

Base—Octagonal.

Weight—Not given.

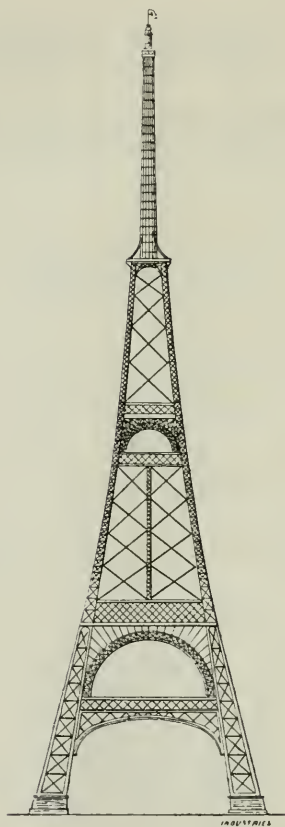
Material—Steel—preferably of nickel steel.

Cost—Not given.

CHIEF FEATURES CLAIMED :

The Main Tower consists of 3 pillars, one at each corner of the octagon, and 8 intermediate piers, all resting on the ground and bolted firmly to the foundation. There are several stages in this Tower. Electric Light is provided.

DESIGN No. 63.



GEORGE W. HALPIN,
22, BELSIZE SQUARE, LONDON, N.W.

DESIGN No. 63.

GEORGE W. HALPIN.

22, Belsize Square, London, N.W.

PARTICULARS.

Height—1,250 feet.

Base—Square.

Weight—Steel, 6,000 tons.

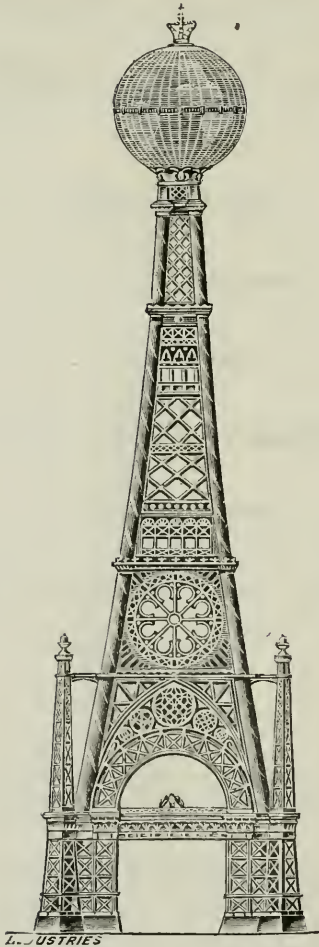
Material—Steel.

Cost—£114,450, including foundations.

CHIEF FEATURES CLAIMED :

This Tower contains 2 floors at base of lantern, the lower of which is at an altitude of 1,200 feet, the upper floor being reserved for scientific purposes. At the base of the circular part there is a platform 900 feet from the ground, and platforms also would be fixed at heights of 630, 550, 310, and 165 feet. Lifts and stairways are provided.

DESIGN No. 64.



LAMONT YOUNG, VILLA LUCIA, NAPLES.

LAMONT YOUNG,
Villa Lucia, Naples.

PARTICULARS.

Height—1,450 feet.

Base—Square.

Weight—23,000 tons, exclusive of lifts, flooring, internal division, and other accessories.

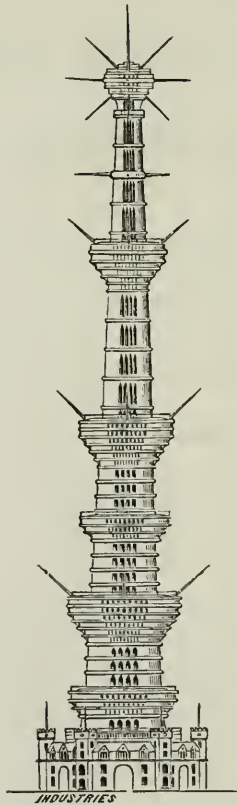
Material—Iron.

Cost—Not given.

CHIEF FEATURES CLAIMED :

The design is composed of a group of 5 Towers, a main central one supporting a large terrestrial Globe and four secondary ones, symmetrically situated with regard to it. The great spaces, both inside and outside the Globe, will form the principal attractions to the Tower. The largest platforms will be at the highest levels. The central Tower will be square. Lifts and staircases are provided. The interior of the sphere will be divided into several floors for Shops, Stores, Restaurants, Music Halls, Lecture Rooms, Theatres, Exhibitions, and other places of amusement and instruction. The lighting would be by Electricity.

DESIGN No. 65.



EDWIN ROUNDTOUR, 18, COLQUHOUN SQUARE,
HELENSBURGH, N.B.

DESIGN No. 65. ("E. ROUNDTOUR.")

EDWIN ROUNDTOUR,

18, Colquhoun Sq., Helensburgh, N.B.

PARTICULARS.

Height—1,236 feet to highest stage.

Base—Hexagonal Base and Circular above.

Weight—13,935 tons.

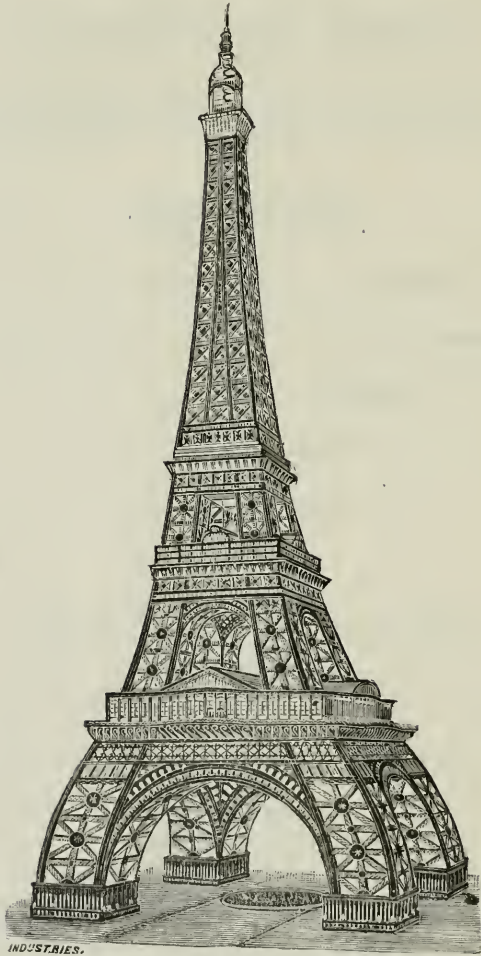
Material—Steel.

Cost—Not stated.

CHIEF FEATURES CLAIMED:

The Tower forms one compact whole with its foundations. The circular form has been adopted on account of the small amount of resistance offered to wind pressure. "This Tower may be considered as a great tree, hollow centrally, with roots well fixed down to iron beams in solid concrete." It is enclosed all round, so as to protect visitors from inclement weather. There are 4 main stages, 300, 600, 900, and 1,200 feet high. On the roof of each stage is an open Promenade, the highest Promenade being 1,236 feet above the ground, with stairs up to it. Lifts are also provided. The lower part of the Tower is bell-shaped.

DESIGN No. 66.



"I SEE ALL."

W. FAWCETT, 48, LOWTHER STREET, CROWN STREET,
LIVERPOOL.

DESIGN No. 66. ("I SEE ALL.")

W. FAWCETT,

48, Lowther St., Crown St., Liverpool.

PARTICULARS.

Height—1,500 feet.

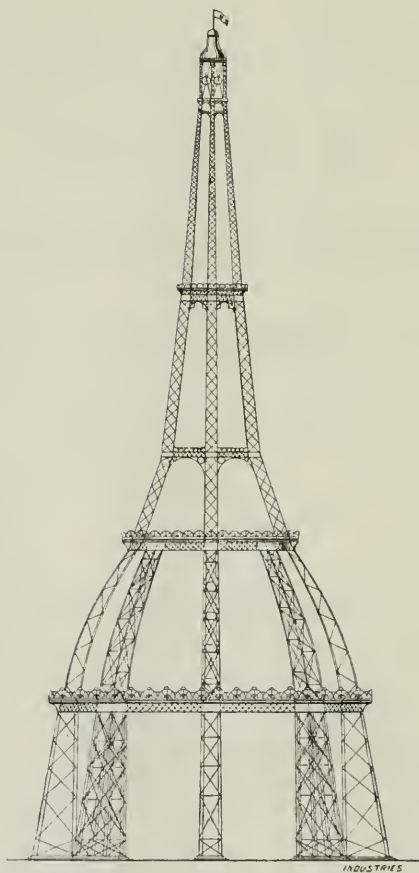
Base—Square.

Weight—Not stated.

Materials—Steel and Iron.

Cost—Not stated.

DESIGN No. 67.



"EXCELSIOR."

JAMES MAXWELL 4, UPPER COLTBRIDGE TERRACE,
EDINBURGH.

DESIGN No. 67.—“EXCELSIOR.”

JAMES MAXWELL,

4, Upper Coltbridge Terrace, Edinburgh.

PARTICULARS.

Height—1,333 feet.

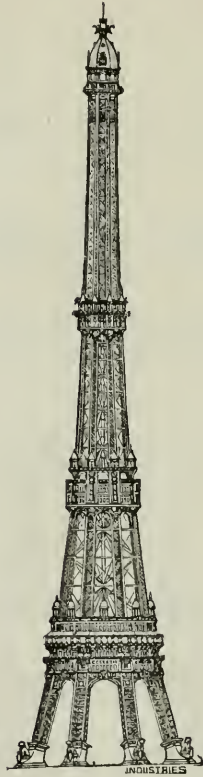
Base—Hexagonal.

Weight—Not stated.

Materials—Steel and Iron.

Cost—£370,000.

DESIGN No. 68.



"BRITISH LION."

W. H. BREITHAAPT, M.Inst.C.E.,
309 AND 310, BAIRD BUILDING, WYANDOTTE AND SIXTH
STREETS, KANSAS CITY, U.S.A.

DESIGN No. 68.—“BRITISH LION.”

W. H. BREITHAUP, M.I.C.E.,
309 and 310, Baird Building,
Wyandotte and Sixth Streets,
Kansas City, U.S.A.

PARTICULARS.

Height—1,200 feet.

Base—Octagonal.

Weight—Steel and Iron, 6,250 tons.

Material—Steel.

Cost—£108,129.

CHIEF FEATURES CLAIMED:

On the 1st floor is a Concert Hall capable of seating 1,350 people with 900 extra in the Gallery, or a total of 2,250 seats with ample Promenade, above which is a Restaurant, and on the top of this stage are the Kitchens, Store-rooms, &c. The 2nd stage will contain Hotel, and Rooms fitted for similar purposes. The 3rd will be used for Meteorological observations. All interior work will be strictly fireproof. The outside covering will be of sheet copper.

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