HARBINGERS OF EIFFEL'S TOWER

FRANK I. JENKINS

"Why is it so sublime," asked Anne Radcliffe at the close of the eighteenth century, "to stand at the foot of a dark tower, and look up its height to the sky and the stars?" Dr. Alison, with other students of the picturesqueness, had already attempted to answer the question. "Magnitude in Height," he wrote, "is expressive to us of Elevation and Magnanimity. The Source of this is so obvious, and the Association itself so natural, that such qualities of mind have, in all ages, been expressed by these images, and such magnitudes described in terms drawn from these qualities of mind." As a fashionable, but none-the-less practical, Regency gentleman, Croker declared, "Great height is the cheapest way and one of the most certain of obtaining sublimity."

The artistic cognoscenti of Regency times thought of height in terms of the picturesque, as it was expressed in contemporary engravings of Wyatt's tower at Fonthill, and in the ravines of Wordsworth's *Simpson Pass*. To succeeding generations, however, height was to suggest different ideas. In Victorian times the tower became a symbol of the optimism and technical endeavour of the era, a monument to man's mechanical progress and his belief in that progress, bolstered in the 1850's by the theories of Charles Darwin. Shortly before the publication of the *Origin of the Species*, Ruskin summed up the nineteenth-century attitude to tower building. "Whenever men have become skilful architects," he said, "there has been a tendency in them to build high; not in any religious feeling, but in mere exuberance of spirit and power—as they dance or sing—with a certain mingling of vanity-like the feeling in which a child builds a tower of cards."

It was in an "exuberance of spirit and power" that nineteenth-century designers set themselves the problem of a tower, one thousand feet high. The height was arbitrary but, dwarfing the towers of medieval cathedrals, the dome of St. Peter's and the Egyptian pyramids, it was sufficient to express the triumph of technical progress. For nearly sixty years architects and engineers struggled towards this end until the goal was reached with Eiffel's tower in Paris. This was, as a contemporary noted, for the nineteenth century "what the great pyramid, which interprets the efforts of an entire people, was for the ancient world." The Eiffel Tower was in fact "the expression of the applied sciences of our times." It was also a culmination—a climax preceded by other attempts to solve virtually the same structural problem—and our main concern here is to examine some of these earlier projects.

Appropriately enough, the first project for a thousand-foot-high tower was for a monument to commemorate the passing of the Reform Bill—a measure which marked the end of Georgian laissez-faire and the beginning of a long period of optimistic reform (Fig. 1). The designer was the Cornish engineer Richard Trevithick.

Trevithick began work on his design in 1831, when the first Reform Bill was introduced into Parliament. He had just returned via the United States from South America where he had been acting as engineer for some particularly deep Peruvian silver mines. This experience seems to have widened his structural horizons. In any case, the monument provided an ideal advertisement for an engineer anxious to re-establish himself in nineteenth-century England.

The Reform Bill—the third Bill—did not become law until June, 1832. A month later the following notice appeared in the London newspapers:

*National Monument in honour of Reform.*—The great measure of Reform having become the law of the land, it is proposed to commemorate the event by the erection of a stupendous column, exceeding in dimensions Cleopatra's Needle, or Pompey's Pillar and symbolical of the beauty, strength and unaffected grandeur of the British Constitution.

In furtherance of this great object, a public meeting is proposed to be held, of which due notice will be given, to set on foot a subscription throughout the United Kingdoms, limiting individual contributions to two guineas, but receiving the smallest sums in aid of the design.

The following noblemen and gentlemen have signified their approbation of the measure:—His Grace the Duke of Norfolk, of Somerset, of Bedford; the Right Honourable Earl of Morley, of Shrewsbury, of Darlington; Lord Stafford; Sir Francis Burdett, M.P.; Joseph Hume, M.P., R. H. Howard, M.P., Wm. Brougham, M.P., J. E. Denison, M.P., A. W. Robarts, M.P., J. Easthope, M.P., General Palmer, M.P.

The same year, 1832, a two-page lithograph of the proposed column was published. It was to be made entirely of cast iron, 1000 feet in height, circular in plan,
with a diameter of 100 feet at the base, tapering at the 
summit to a diameter of 12 feet, and was to be gilded. 
Trevithick's own specification provides perhaps the most 
succinct description of the column.

Design and specification for erecting a gilded conical 
cast-iron monument . . . 1000 feet in height, 100 feet in 
diameter at the base and 12 feet in diameter at the top; 
2 inches thick, in 1500 pieces of 10 foot square, with an 
opening in the centre of each piece 6 foot in diameter, 
also in each corner of 18 inches diameter, for the purpose 
of lessening the resistance of the wind, and lightening 
the structure; with flanges on every edge on their inside 
to screw them together; seated on a circular stone 
foundation 6 foot wide, with an ornamental base column 
of 60 feet high; and a capital with 50 foot diameter plat- 
form, and figure on the top of 40 feet high; with a cylin- 
der of 10 foot diameter in the centre of the cone, the 
whole height, for the accommodation of persons ascending 
to the top. Each cast-iron square would weigh about 3 
tons, to be all screwed together, with sheet lead between 
every joint. The whole weight would be about 6,000 tons. 
The proportions of this cone to its height would be about 
the same as the general shape of spires in England.8

Trevithick went carefully into the questions of cost 
and the time required for erection. The latter was to be 
reduced by the use of steam-engines. “A steam-engine of 
20-horse power is sufficient for lifting one square of iron 
to the top in ten minutes, and as any number of men 
might work at the same time, screwing them together, 
one square could easily be fixed every hour; 1500 squares 
requiring less than six months for the completion of the 
cone. A proposal has been made by the iron founders to 
deliver these castings on the spot at 27 a ton; at this rate 
the whole expense of completing this national monument 
would not exceed £80,000.”9

Members of the public were to be carried to the top of 
the monument by an air lift accommodating 25 persons 
and moving through the ten-foot-diameter shaft in the 
centre of the structure (Figs. 2 and 3). The journey from 
the ground to the summit, it was estimated, would take 
no longer than five or six minutes. Trevithick’s descrip-
tion of the proposed lift was as follows:

[There was to be] a cylinder of 10 foot diameter, 
through which the public would ascend to the top, . . . 
in which [cylinder would move] a hollow floating sheet- 
iron piston, with a seat round it, accommodating 25 per-
sons; a steam-engine forces air into the cylinder-column 
from a blast cylinder of the same diameter and, working 
3 feet a second, would raise the floating piston to the top 
at the same speed, or five or six minutes ascending the 
whole height; the descent would require the same time. 
A door at the bottom of the ascending cylinder opens in-
wards, which when shut could not be opened again, hav-
ing a pressure of 15,000 lbs. of air tending to keep it shut 
until the piston descends to the bottom. By closing the 
valve in the piston it would ascend to the top with the 
passengers floating on air, the same as a regulating blast-
piston, or the upper plank of a smith’s bellows. The air

apparatus from the engine should be of a proper size to 
amit the floating piston with the passengers to rise and 
fall gradually, by the partially opening or shutting of the 
valves in the top of the piston. Supposing no springs or 
soft substance for the piston to strike on at the bottom 
of the column-cylinder, descending at 3 feet a second 
would give no greater shock than falling from 9 inches 
high, that being the rate of falling bodies, or the same as 
a person being suddenly stopped when walking at the 
rate of two miles an hour. The pressure of the air under 
the piston would be about 1/2 lb. on the square inch; the 
aperture cannot let the piston move above 3 feet a second, 
but the speed may be reduced to any rate required by 
opening or shutting the valves on the floating piston.10

Trevithick’s proposals for the lift were revolutionary. 
As the designer’s son noted with filial admiration and 
picturesque phraseology, “Some make a long journey to 
the great pyramids, 500 feet high. How much more pleas-
ant would be Trevithick’s proposed floating 1000 feet up-
wards on an air cushion, controlled by his high-pressure 
steam-engine, and having from the loftiest pedestal of 
human art surveyed imperial London, to be again lowered 
to the every-day level at a safe speed, regulated by such 
simple acts as rising from the seat.”11 It is worth noting 
that the designs for the Strutt and Frost elevator were 
not published until 1835, three years after Trevithick’s 
proposals.

The project seems to have aroused a certain amount of 
interest and during the next nine months a number of 
meetings were held. Early in 1833 the proposal was 
placed before the king and acknowledged in a letter dated 
March 1st of that year. But within two months Trevithick 
died and with him interest in the great gilded column. 
The scheme attracted but little interest when it was res-
urrected and suggested as a memorial to Prince Albert 
in 1862.

It may have been the unusual form of the monument, 
coupled with its political reminders, which caused inter-
est to wane so quickly in the project.12 On the other hand, 
scepticism as to the structural feasibility of the scheme 
may account for its being abandoned. Despite the holes 
to be cut in the iron plates, “for the purpose of lessen-
ing the resistance of the wind and lightening the struc-
ture,” the wind loads would have been considerable, and 
the stability of the structure without much modification 
 extremely doubtful. Trevithick’s casual reference to the 
“circular stone foundation 6 foot wide” suggests that the 
engineer was not fully aware of the implications of a 
6000-ton load, nor of the colossal moment set up on a 
1000-foot-high tower.

Nevertheless, Trevithick’s project remains as evidence 
of the spirit of early structural pioneers. In the words of 
the engineer’s son, “To Trevithick’s soaring genius noth-
ing appeared very small or very large, or very costly.” 
The vision of a golden tower nearly three times the height

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Fig. 1. Monument to the Reform Act—project by Richard Treve-thick, 1832.

Figs. 2 & 3. Monument to the Reform Act. Plan and section. (Courtesy Trustees of the British Museum)

Fig. 4. Prospect Tower 1000 Feet High—project by C. Burton, 1852. (Courtesy Librarian, R. I. B. A.)

Fig. 5. Prospect Tower 1000 Feet High. Plan. (Courtesy Librarian, R. I. B. A.)
of St. Paul’s rising through the mist and smoke of Lon-
don was a glorious one and one which perhaps only the
nineteenth century could have produced.

Nineteen years later Victorian exuberance reached its
zenith with the Great Exhibition. Appropriately, Paxton,
the designer of the exhibition building, was knighted the
day the exhibition closed. But a problem arose as to the
best method of disposing of the great iron and glass
building which had received such wide acclaim. In
February, 1852, the Gentleman’s Magazine reported, “The
building has now returned into the hands of the con-
tractors . . . Lord Seymour, Sir William Cubitt and Dr.
Lindley . . . are appointed commissioners for the purpose
of obtaining information as to the cost of altering, re-
moving and repairing the building, or portions of it, the
purpose to which it is applicable and the probable ex-
 pense of maintaining it.” 13 In March the Commissioners
reported against the retention of the building and the
House of Commons ordered it to be dismantled within
two months. This drew a written remonstrance from Pax-
ton while the contractors, Messrs. Fox and Henderson,
“attempted to arrest the decree by opening the building
gratuitously to the loving public.” 14 The controversy was
by no means settled; the question was revived and de-
bated in Parliament, and a motion for its preservation
was defeated on April 29th. The Builder for May 8th
commented, “Our readers must have been prepared for
the vote in the House of Commons against the retention
of the building, and the fact that it must consequently
come down.” 15 The journal then discussed some sugges-
tions it had received for the future of the building. A
Mr. C. B. Allen proposed “the conversion of the materials
into a pyramid based on an area equal to that of the Great
Egyptian Pyramid,” while another correspondent, “W.
B.,” wished “the iron rai ling which at present surrounds
the structure to remain exactly as it now stands, the
enclosed space to be converted into an ornamental shrub-
bery, with walks open to the public; a statue of His Royal
Highness Prince Albert to be placed at the east or west
end, with other such appropriate ornaments as good taste
may suggest.” The Builder’s own proposal was “that the
exact outline of the area should be planted with trees.” 16

In a previous issue of the Builder, however, a much
more exciting proposal had been made by an architect,
C. Burton. Burton proposed to build a tower 1000 feet
high with glass and iron salvaged from the demolition of
the exhibition building. “There never was so favourable
an opportunity,” he wrote, “of erecting so gigantic a
tower at so comparatively trifling a cost. The material is
already at hand, and a site near might easily be found.
The building, from the peculiarity of its design, forms its
own scaffold, and the ground it would occupy is less than
one acre, and with the proposed terrace round the build-
ing, altogether under four acres.” 17

Burton illustrated his scheme with an engraved plan
and elevation (Figs. 4 and 5). The building was to con-
sist of a number of towers, telescoped, as it were, within
one another, each tower being an independent structure
with its iron framework carried down to the foundations.
In the designer’s own words, “In the centre is a large
octagon, composed of twenty-four columns, which spring
from the foundation, in which they are securely bedded,
to the very top of the building. Adjoining is a decagon,
similarly constructed, forming the second tower . . . rising
to the gallery of 840 feet. The dodecagon tower also
springs from the foundations, and is carried up to an
altitude of 600 feet. We then see a square of columns . . .
this likewise rises from the foundations to where the clock
is placed, and is surmounted by four turrets, which lend
their aid in supporting the building, and screen in some
measure those adventurous visitors who arrive at this
aerial promenade. Another square of larger dimensions
abuts on all these and rises to a level of 198 feet, upon
which four galleries, each 120 feet in length, are to be
constructed.” 18

The building was to have a clock, “of proportional
size to the tower,” 44 feet in diameter with numerals 10
feet high. This was to be placed 440 feet above the ground.
It was with understandable pride that the designer
boasted, “were St. Paul’s Cathedral placed on the top of
St. Peter’s, there would be room for the Nelson’s Column,
which would about reach the crystal tower’s summit.”
It is interesting to note that Burton had passed over Lon-
don in the famous Nassau balloon. He could “speak feel-
ingly as to the wonderful appearance of the Great Metrop-
olis and the lovely scenery surrounding it, from an
elevation of 1,000 feet.” From his tower, he claimed, it
would be possible to view the country “for a hundred
miles around London . . . without the risk of a balloon
descent.”

Although Messrs. Fox and Henderson, the contractors
for the original exhibition building, “expressed their
conviction that the project could be carried out,” little
interest seems to have been shown in the scheme. Ulti-
mately the exhibition building was purchased by a spe-
cially formed company, the board of which had consider-
able railway interests, and re-erected, with slight
modifications, as the Crystal Palace, at Sydenham.19

It is interesting to note, however, that in 1889 at least
one of the designs submitted to the Tower Company
Limited of London (an organization which, urged on by
the success of Eiffel’s tower, proposed to erect a tower
at least as high and financially profitable as that in Paris),
employed a structural system similar to that proposed by
Burton. The designer was the City Engineer of Quebec,
C. Baillarge. His tower consisted of nine “telescope”
units and was to be 1600 feet high.20

In the 1870’s the United States was preparing to cele-
brate her first century of independence and the idea of a monument to the achievement of the young republic was in the minds of contemporary designers. Perhaps the most exciting was that projected by Messrs. Clarke and Reeves of Phoenixville.

They proposed, as Trevithick and Burton had done before them, to build a giant tower in iron 1000 feet high (Fig. 6). The plan of the tower was to be circular, 150 feet in diameter at the base diminishing to 30 feet at the top. There was to be a cylindrical shaft 30 feet in diameter in the centre of the tower accommodating four elevators. These were to “ascend in three and descend in five minutes, so as to be capable of transporting about 500 passengers per hour.” In addition, there was to be a spiral staircase, winding around the central shaft (Fig. 7).

The designers were very conscious of the importance of wind loads in the design of such a structure and reduced the bearing surface of the tower to a minimum. The tower was to be framed with wrought iron Phoenix Columns, a proprietary product of the Clarke and Reeves factory, the Phoenixville Bridge Works. These were circular in section made up of lengths of iron of segmental section bolted together through projecting flanges to form hollow tubes (Fig. 8). The main framing was to be braced diagonally by iron tubes of smaller section, “so that the tower will be as rigid as if made of stone, and yet will expose very little surface to the wind.” Allowing a side wind force of 50 lbs. per square foot, it was estimated that the strain on the lowest columns would not exceed 5,000 lbs. per square inch.

There were to be four viewing galleries “roofed over and protected with wire netting, in order to prevent accidents.” The tower was intended for a site adjoining the Centennial Exposition in Philadelphia to take place in 1876, and it was suggested that the latter, “by calcium and electric lights from the tower ... might be brilliantly illuminated at night.” This foreshadows the project of M. Sebillot who in 1881 proposed to light Paris by electric lamps placed at a height of almost a thousand feet. Eiffel suggests that Sebillot’s idea had its origin in America, and the latter may have been familiar with the Philadelphia project. Thirty-three years earlier James Buckingham had proposed to light his model town, Victoria, in a similar way although the tower in this case was considerably shorter.

The Scientific American was enthusiastic about the Philadelphia tower. “As did the descendants of Noah so propose we to do. . . . And to its prototype, Babel, a pile of sun-dried clay which authorities assert, at the hour of the confusion of tongues, had not attained an altitude of over one hundred and fifty-six feet, the graceful shaft of metal, rearing its summit a thousand feet above the ground, forms a fitting contrast, typical of the knowledge

Fig. 6. Centennial Tower One Thousand Feet High—project by Clarke & Reeves, 1874. (Courtesy Trustees of the British Museum)

Fig. 7. Centennial Tower. Plan and details of elevators. (Courtesy Trustees of the British Museum)
and skill which intervening ages have taught mankind.”

It was peculiarly fitting as a monument to the centennial of the American Republic—“Not only . . . shall we commemorate our birthday by the loftiest structure ever built by man, but by an edifice designed by American engineers, reared by American mechanics, and constructed of material purely the produce of American soil.” Despite this and the fact that the designers estimated the tower would take less than a year to complete, the project seems to have obtained little support and was soon abandoned.

One of the most striking characteristics of the Philadelphia tower is its complete disregard for contemporary architectural theory. Trevithick’s column, although far removed from any classical prototype, was a column in the classical sense with its divisions of base, shaft and capital; it was to rise from a base fronted by octastyle Corinthian porticos. The engineer was trying consciously to make his structure “architectural” in the accepted sense. Burton attempted, more successfully, an architectural treatment for his tower. But Clarke and Reeves—despite the very insignificant tribute to the Gothic Revival at the base of their tower—were concerned only with structure as structure and its direct and logical achievement.

Of the projects so far discussed, that by Clarke and Reeves was the most feasible. M. Sebillot’s scheme for lighting Paris incorporated a thousand-foot-high tower, but his proposals, according to Eiffel, were impracticable. Sebillot’s first scheme was followed by another in which he was partnered by M. Bourdais; they proposed to build a tower of the same height but in stone. The difficulties inherent in this are obvious—the provision of foundations capable of receiving the enormous load, the dangers of unequal settlement and the length of time and difficulty of construction—and the proposal was soon forgotten. It remained for Eiffel to construct the first tower of these proportions.

In the middle 1880’s the French were preparing to mark the centennial of their Revolution by a great international exposition, as the Americans had done in 1876. Gustav Eiffel had already produced such structural wonders as the Garabit viaduct and, he related, it was the results of his studies on this type of work which led him to propose a tower 300 metres high for the forthcoming exposition. This was to be constructed on the same principles as those employed in the iron piers of his railway viaducts. His suggestion was received with some enthusiasm by the government and a commission was set up to examine the technical aspects of the project. A subcommittee was appointed to verify the details and calculations of the scheme. Meanwhile other designs were submitted, but at its second meeting (June 12th, 1886) the commission declared that none of these was suitable and

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accepted the favourable report of the sub-committee regarding Eiffel’s project. The commission stated that the exhibition tower should be “an original masterpiece of the metallic industry” and that “the Eiffel tower seemed to be alone in fully filling this condition.”

The form of the tower (Fig. 9) is too well known to warrant description here, but Eiffel’s account of the theory underlying its design is of interest:

The fundamental idea of these pylons or great archways—[which he employed in his viaducts]—is based on a method of construction peculiar to me, of which the principle consists in giving to the edges of the pyramid a curve of such a nature that the pyramid shall be capable of resisting the force of the wind, without necessitating the junction of the edges by diagonals, as is usually done.

On this principle the tower was designed in the form of a pyramid, with four curved supports, isolated from each other and joined only by the platforms of the different stories. Higher up only, and where the four supports are sufficiently close to each other, the ordinary diagonals are used.

The question of foundations capable of sustaining the load of over 7000 tons was important. The Champs de Mars, the site of the tower, has a sub-soil composed of a deep stratum of clay surmounted by a layer of sand and gravel of varying depth. The actual position of the tower was decided by the position of the maximum depth of the latter. The foundation of each pier is separated from the clay by a thickness of gravel sufficient to spread its load adequately. The piers rest on beds of masonry reinforced by iron bars cramping the stone together; each masonry bed has a concrete foundation 60 square metres in area. Nevertheless, the least possibility of settlement when the full load of the tower was applied had to be guarded against, and to this end room was made “at the angles of the piers, where they rest on the masonry, for hydraulic presses of 800 tons. By means of these presses each pier can be displaced and raised as much as is necessary by inserting steel wedges beneath it.”

With regard to the actual erection of the tower—a task which required careful programming—we cannot do better than quote Eiffel’s own account.

The raising into place of the ironwork which forms the upper part of the tower was accomplished by derricks and windlasses. As soon as the piers reached a height of 100 feet, their inclination rendered scaffolding necessary to carry on the construction to a height of 169 feet, at which point are established the horizontal beams uniting the four piers and forming the skeleton of the first storey. The solid construction of the first platform was a great step towards the success of the work.

The raising of the pillars between the first and second platforms was rapidly accomplished by the same method as that employed between the ground and the first storey, i.e., the pieces of iron were raised by four cranes attached to the beams of the lift placed in each pier.

The erection of that part of the tower comprised between the second platform and the summit was carried out by means of the same cranes as had served for the lower part; but these no longer worked on an inclined plane, but were raised along an upright, formed by the central guide of the higher lift.

Work went on so rapidly that at the Fête Nationale on July 14th, 1888, fireworks were displayed on the second storey. Within less than a year, by March 31st, 1889, the tower reached its full height of 300 metres. A newspaper correspondent who went to the top reported that the ascent by the stairway took forty minutes. When the lifts were installed it was estimated that the time of ascent would be five minutes; it was in fact seven minutes.

A writer in 1889 commented on the tower, “It rises like a delicate lattice-work of wires, and, as a whole, it is all full of poesy.” The public were equally enthusiastic; 1,968,287 people ascended the tower in the year of the Exhibition. William Morris, as one might expect, was less enthusiastic. The only reason he did much writing on the galleries of the tower was, he explained, because that was the only place in Paris where one could not see the structure. In the early days of the project disapproval had been more violent. In February, 1887, the famous Protestation des Artistes was made, “in the name of French good taste, in the name of art and in the name of menaced French history,” against the “Tower of Babel” which “even commercial America would not want.”

But the tower had its defenders, the Protestation failed, and in the year of the Exhibition a writer noted, “We can no longer deny that the gigantic work is absolutely beautiful. It is for our epoch . . . what the great pyramid, which interprets the efforts of an entire people, was for the ancient world. . . . The work that Mr. Eiffel will have had the glory of carrying out is, in fact, the expression of the applied sciences of our time.”

Eiffel reached the goal for which engineers had striven for nearly sixty years. His tower was to some extent a monument to the centennial of the French Revolution; it may be significant that two of its prototypes, Trevithick’s Reform Column and Clarke and Reeves’ Centennial Tower were also monuments to revolutionary events. At any rate, the Eiffel tower stands as a symbol of nineteenth-century transcendentalism and optimism. It was the product of an age of positive values—although already, at the time of its erection, those values were shifting and weakening. Although the tower itself is a manifestation of the optimistic ambition of the nineteenth century, in the art nouveau of its decoration we find evidence of something else—the ennui of the fin de siècle.

UNIVERSITY OF MANCHESTER
3. The Croker Papers, I, 57.
7. Richard Trevithick, Design for a gilded national monument of cast-iron 1000 feet high and 100 feet diameter at the base. In commemoration of the passing of the Reform Act. Lithograph, 2 sheets (London, 1832).
12. The 'thirties and "Hungry Forties" were not the times for extravagant monuments.
19. The Sydenham venture proved profitable and other projects of a similar nature were inaugurated, notably at Plymouth and Bath. *The Builder*, X (1852), 517.
27. Designs were submitted by MM. Boucher, Bourdais, Henry, Marion, Pochet, Robert, Rouyer and Speyser.

**AMERICAN NOTES**

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**PHOTOGRAMMETRY FOR HABS**

As we go to press the National Park Service and the Engineering Experiment Station of Ohio State University have virtually completed an agreement for the photogrammetric measurement of historic buildings. The technique, first developed in northern Europe before World War II, is described in an article by Perry E. Borchers, “The Measure of the Future and the Past,” *Journal of the American Institute of Architects*, October, 1957, pp. 352–4.

Using “stereopair” photography with careful controls, drawings of existing structures can be produced with great accuracy. Plotting equipment developed for making contour maps from aerial photographs can be used.

The purpose of the present contract is to compare costs of work done by photogrammetry with the conventional methods. It is anticipated that the smaller and simpler buildings can be done more cheaply the old way. Tall and elaborate structures requiring scaffolding to reach the various parts can probably be done more quickly and accurately by photogrammetry. The façade of the Plum Street Temple, a fancy Moorish-style building in Cincinnati, is to be delineated the new way. Other types of structures will be sampled.

One of the most obvious advantages of the new technique is that a large number of structures can be quickly “canned” with little more than camera work. The drawings could be made from the photographs any time later. It might be noted, however, that this idea failed the Germans who made stereo-photographic recordings of their valuable buildings before the great destruction of World War II. Sad to say, the Russians afterwards discovered the plates, cleaned off the emulsion and used them for window glass.

Professor Borchers, who will handle this work for the University, expects to make an extended tour of Europe next year to investigate the equipment and techniques in use there. Incidentally, he is one of the newest members of SAH.

**ARCHITECTURAL STUDENT SUMMER PROGRAM, 1958**

For the past seven summers the National Park Service has conducted a program for architectural students in which measured drawings of historic buildings are prepared. The work is supervised by men who are both able to instruct in the professional draftsmanship not taught in the schools and who can explain design and construction of the past. The pay is in general commensurate with that of private offices. The program has given a number of men the chance to draw for pay for the first time.

A great quantity of work has been accomplished in places as remote as Christiansted, St. Croix, Virgin Islands, Natchez, Mississippi, and Quincy, Massachusetts. This fall small drafting contracts have been farmed out to selected veterans of the summer campaign so they can profitably continue the work back at school on their own.

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