

A LIFE OF PERIL:

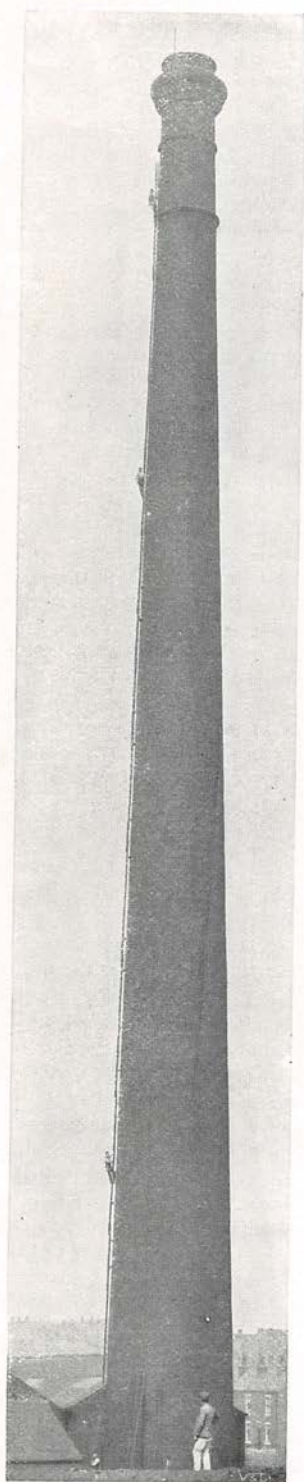
THE LANCASHIRE STEEPLEJACK AND HIS WORK.

BY GEORGE FALCONER.

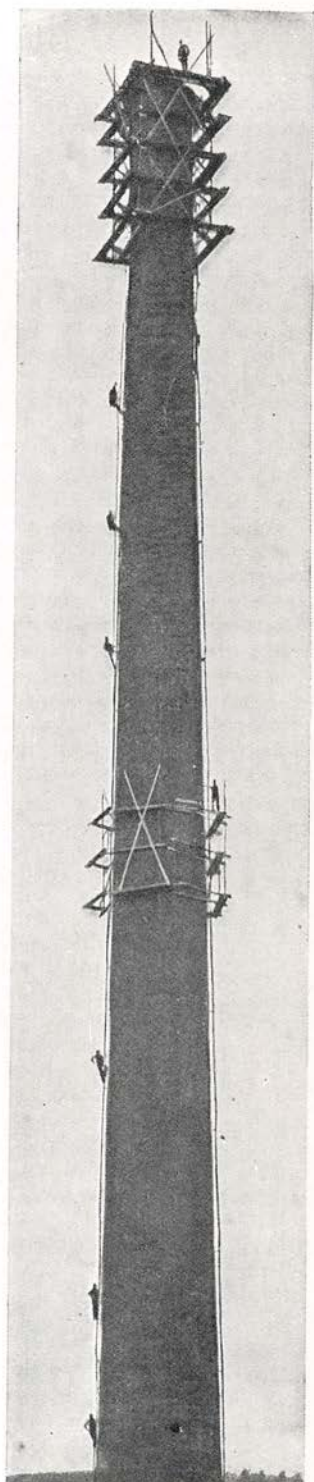
TO the ordinary reader the prosaic name of Mr. J. Smith may not appear to be a remarkably distinctive one. Nevertheless, in the North of England it is one of considerable repute, and there are few of the inhabitants of those parts who have not heard of "The Lancashire Steeplejack." To those who dwell in the South of England the steeplejack is almost unknown, owing to the comparative scarcity of manufactories; but in the busy industrial centres of the North, where lofty chimneys are more abundant than trees, he is an indispensable member of the community.

Mr. Smith is a typical North-countryman, despite the fact that he is a Coventry man by birth; he has resided for so many years in Rochdale that he has become imbued with the geniality, hospitality, and *bonhomie* so characteristic of the people of the North. He is not a man of large build, and, although approaching his fiftieth year, he is as lithe and active as many men who are half his age. He still indulges in a daily vigorous course of gymnastics, such as the dumb-bells, horizontal and parallel bars, punching the ball, and so forth, since he maintains that it is absolutely essential that he should retain perfect suppleness of limb to enable him to conduct his work as safely, carefully, and as thoroughly as hitherto.

Rochdale is one of the great centres of the cotton spinning and kindred industries, so that this intrepid steeplejack lives, moves, and has his being in a veritable world of chimneys. Tall, gaunt, blackened stacks,



LADDERING A CHIMNEY.

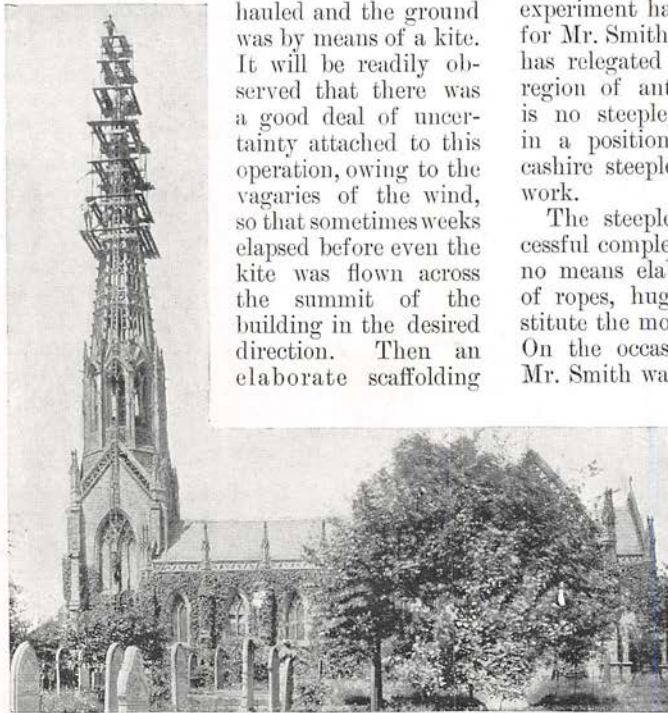


BELTING AND POINTING A
CHIMNEY.

ranging from 100 to 300 feet in height, are silhouetted sharply against the sky in all directions so far as the eye can reach. Mr. Smith is responsible for the safety of a large proportion of these stacks, since several firms in Liverpool, Manchester, Bolton, and other large towns have contracted with him for the periodical examination of their chimneys, to ensure their being maintained in constant repair.

As I have already mentioned, Mr. Smith hails from Coventry, where his father—a shoemaker by trade—intended his son to follow in his footsteps; but beeswax and leather presented no alluring attractions to Smith junior, who had formed loftier aspirations. He, therefore, entered a large firm of builders, where his remarkable clear-headedness while engaged on work at dizzy heights soon attracted attention.

"In those days," remarked Mr. Smith, "to repair a lofty chimney or steeple was a laborious, expensive, and risky undertaking. The general method for establishing communication between the summit of the structure to be overhauled and the ground was by means of a kite. It will be readily observed that there was a good deal of uncertainty attached to this operation, owing to the vagaries of the wind, so that sometimes weeks elapsed before even the kite was flown across the summit of the building in the desired direction. Then an elaborate scaffolding



REPAIRING THE SPIRE OF DARCY LEVER CHURCH.

had to be erected, upon which several more weeks' work would be expended, so that mill-owners were rather chary of having their

stacks repaired. I was deeply impressed with the disadvantages attending the existing methods, and it occurred to me that as



MR. J. SMITH.

"The Lancashire Steeplejack."

ladders were employed for examining the roof or walls of a building, they might be utilised for the same purpose in the case of chimneys. At any rate, I resolved to make the attempt." What the result of that experiment has been is generally well known, for Mr. Smith's method of scaling a chimney has relegated the kite-flying process to the region of antiquities, and nowadays there is no steeplejack in the country who is in a position to compete with the Lancashire steeplejack in this particular class of work.

The steeplejack's appliances for the successful completion of his allotted task are by no means elaborate. Ladders, planks, miles of ropes, huge iron dogs, and pulleys constitute the most important items of his plant. On the occasion of my visit to Rochdale, Mr. Smith was just engaged in the task of scaling a chimney at Heywood, and he suggested, therefore, that I should drive over with him to the scene of action and personally watch the operation.

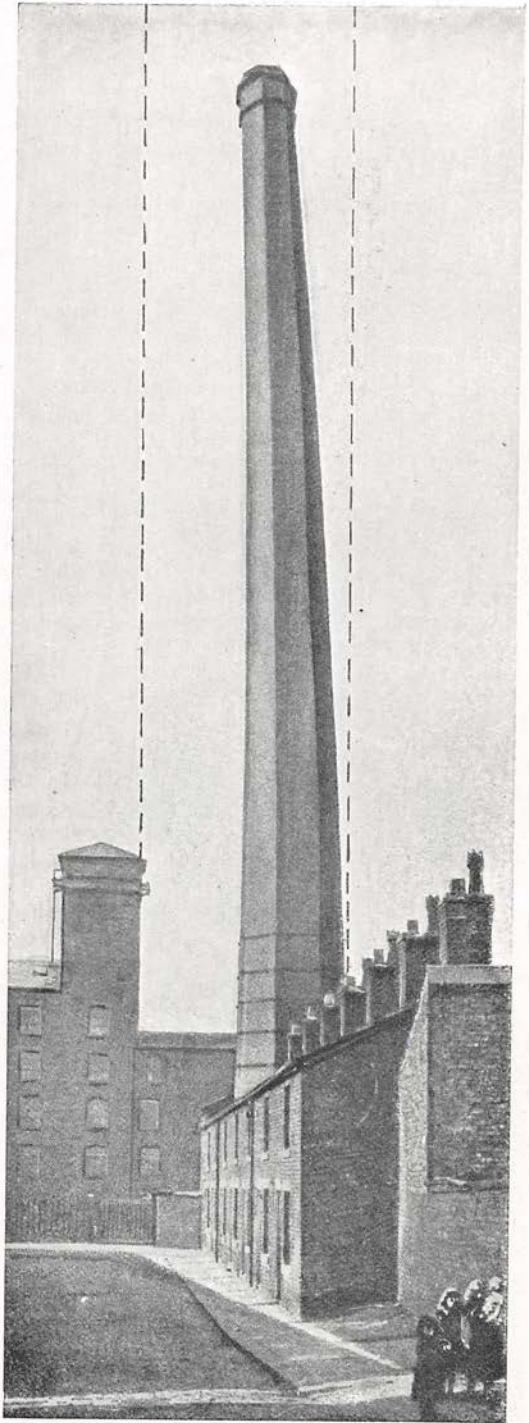
In this instance the chimney was square in shape and measured about 170 feet in height. When we arrived, the men were busily engaged in laddering the structure. The ladders utilised for this purpose measure about 21 feet in length, and are so constructed that the maximum of strength is obtained with a corresponding minimum of weight. The steeplejack drove one of the

iron dogs firmly and deeply into the brickwork at the base of the chimney, securely lashed a ladder thereto, climbed to the top of the ladder, drove in another dog, hauled up a second ladder, firmly lashed that to the dog at the top of the first ladder, scaled to the top of the second ladder, drove in an iron dog, hauled up another ladder, and so on, until a continuous array of ladders stretched up one side of the chimney from its base to the summit.

The rapidity with which the work is carried out is remarkable. On this particular occasion the chimney was successfully laddered in less than two hours, which is a contrast to the bygone tedious process with the kite, or the envelopment of the chimney from top to bottom in scaffolding. The chimney upon which the operations were in progress at the time of my visit was a perfectly plain one—that is to say, there was no coping crowning the summit of the shaft. This prompted me to ask Mr. Smith how he contrived to overcome a projecting coping.

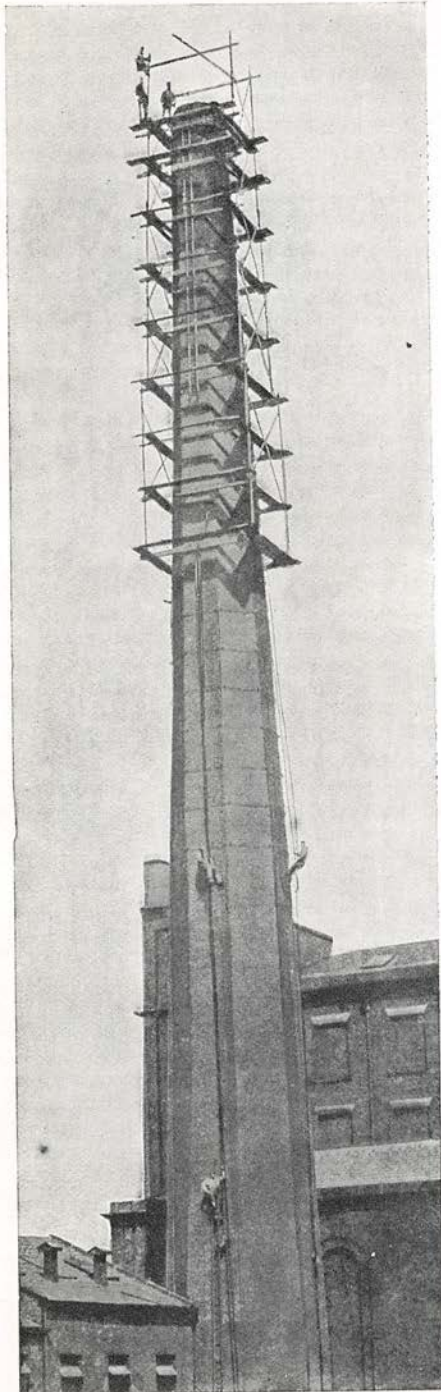
“Oh, in just the same way,” he replied, with his characteristic nonchalance. “It is natural for you to climb a ladder when it leans against a wall, therefore why should you hesitate to climb the ladder when it leans away from the wall?” This question was unanswerable, but, at the same time, the idea of climbing a ladder leaning away from a wall at an angle of forty-five degrees, a hundred feet or so above the ground, certainly appeared a little disconcerting to my primitive ideas.

“Repairing coping-stones,” remarked Mr. Smith, “is an important and hazardous branch of the work. The coping to a chimney will often weigh from twenty to thirty tons. If by any chance during the repair a mass suddenly became dislodged and fell upon surrounding buildings, it would work terrible havoc. When a chimney is erected, the builder clamps the coping-stones together with iron cramps, in much the same way as beams of timber are very often secured together. Sometimes when we ascend a chimney that has not been touched for nearly half a century we find the coping-stones considerably decayed through the combined action of heat, wind, and rain, so that they crumble at the slightest touch. I remember on one occasion I had a very narrow escape. I was busily at work removing a dangerous coping-stone, when, without the



THE ENGLISH TOWER OF PISA—THE CROOKED CHIMNEY OF HEYWOOD.

slightest warning, the large mass became detached. I only just had time to throw myself upon the narrow edge of the chimney wall when it crashed through the scaffolding upon which I was at work at the time. The chimney wall was only nine inches thick, and there I remained, suspended in the air, with my head hanging over the black mouth of the chimney, from which asphyxiating fumes proceeded, and my legs dangling in the air. However, with great effort I contrived to work my way gradually round to the ladder, by which I safely descended to the ground."



STEPLADDER JACKS AT WORK ON THE SIDES OF A CHIMNEY.

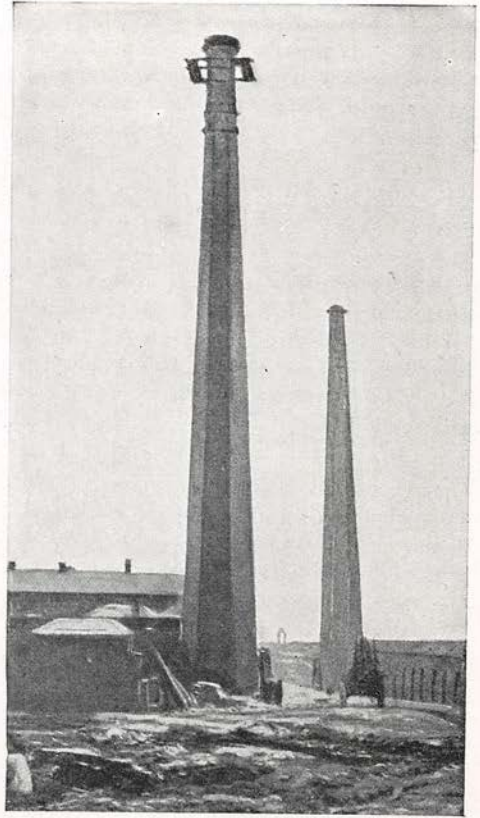
The laddering process completed, Mr. Smith proceeds to examine the masonry of the chimney to discover what repairs are necessary. The stack I visited at Heywood was in a sad stage of decay. The weather, combined with the heat from the furnaces below during some forty years, had considerably impaired the masonry. Huge cracks were visible, extending in all directions, and, when examined through a pair of field-glasses, to the inexperienced eye the structure looked as if it must inevitably collapse. The walls of the chimneys, as a rule, are about three feet in thickness at the base, tapering away to nine inches at the top.

"Occasionally," commented Mr. Smith, "it is necessary for me to examine the building from the inside. The day selected for the task, which I can assure you is far from being a pleasant one, is generally Sunday, when the fires are extinguished. In these cases a thick, stout beam of timber is secured across the top of the chimney, and I lower myself by a pulley and seat. I recollect a curious incident which happened a few weeks ago in connection with a task of this description. When I descended to the bottom of the chimney I found a huge pool of water, about two feet in depth. How did it come there? Well, you see, the stack was situated in a valley, and the water had gravitated to this spot from the surrounding highlands. This discovery, I may tell you, was a little disconcerting at first. It was important that the water should be removed in order to permit the furnaces to burn. This was easier said than done. If we had drained the water entirely away from the spot, the chimney might have suddenly collapsed about our ears, because we did not know to what extent the water was supporting the foundations of the chimney. We subsequently overcame the difficulty by simply drawing off the surface water, and by this means eventually freed the interior of the stack from water."

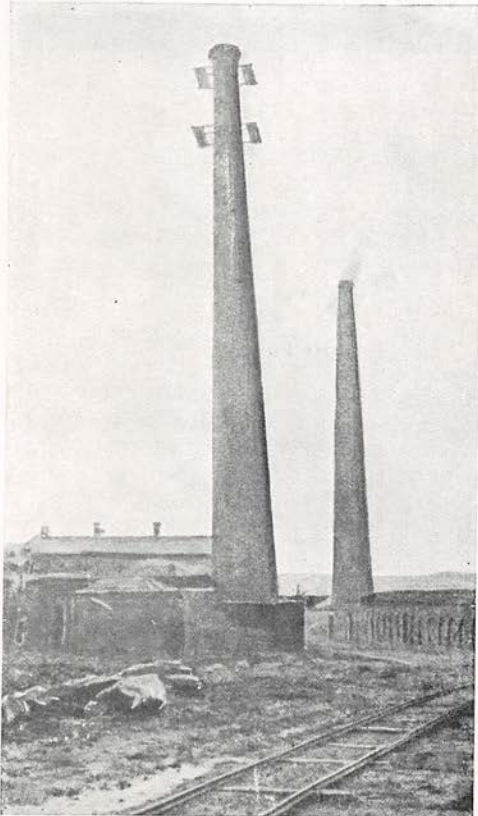
The general repair necessary to a chimney, however, is pointing—that is, refilling the interstices between the bricks with new mastic, as time and weather deteriorate the old mortar. A scaffolding is generally erected around the summit of the stack, and from this seats are suspended

upon endless ropes run through strong pulleys, so that the workman can raise and lower himself at will. The scaffolding is constructed upon what is technically known as the "clip and pole" system. If sound materials are employed, and there is no bungling in the erection, it is absolutely impossible for it to collapse.

It is a strange fact that hitherto but scant attention has been paid to the maintenance of lofty chimneys. During later years, however, proprietors have become more particular in this respect, and their money is certainly well invested. The average chimney will weigh anything from 1,000 to 4,000 tons and cost from £1,000 to £4,000 to construct. Sometimes a chimney will be found to be in such a ruinous condition that to the uninitiated it appears as if it must be demolished and a new stack erected. However desirable such a course might be, it is not always possible, especially where the buildings are crowded together. The common malady is bulging, which is caused by



—AFTER.



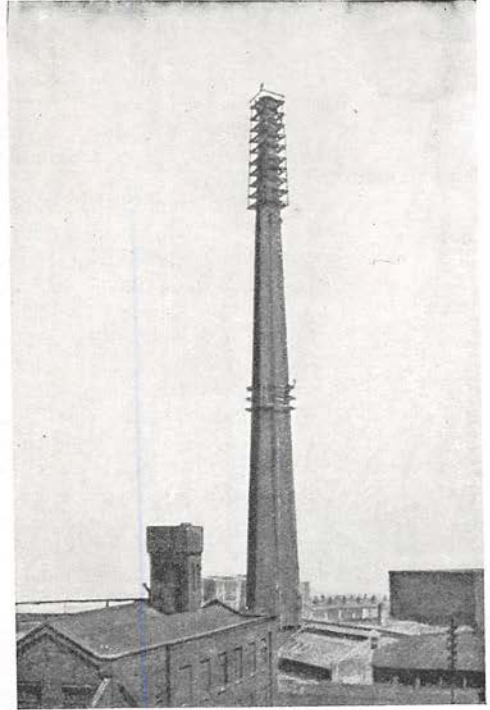
STRAIGHTENING A CHIMNEY—BEFORE.

excessive heat. In such cases a new lease of life is imparted to the structure by enveloping it with broad iron bands wherever necessary, in much the same manner as a cooper hoops his barrels.

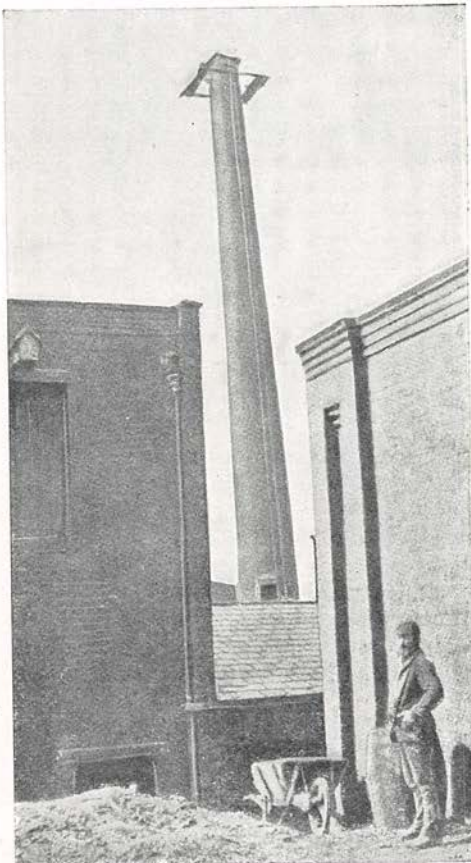
"One of the most remarkable instances of 'belting' that I can recall," said Mr. Smith, "was that of a chimney belonging to Messrs. Thomas Walmsley and Sons, at Bolton. This stack had to withstand an appalling force of heat, for between thirty and forty huge furnaces roared incessantly at its base, and the smoke and heat issuing from the daily consumption of one hundred tons of coal were evacuated through this one shaft. The result was that the chimney was cracked and bulged in all directions in the most startling manner. As it was impossible to erect a new shaft, I determined to encase practically the whole structure in iron from top to bottom. This was no light task, as the chimney was over 200 feet in height. Owing to the unusually heavy nature of the belting work I completely enveloped the stack in scaffolding. This alone took three weeks to erect. It

comprised twenty-seven platforms, while 400 feet of poles and 7,000 feet of scaffold planks were requisitioned." Our photograph comprehensively illustrates the heavy nature of this unique task, and also how thoroughly the chimney was belted. When Mr. Smith has repointed a shaft he applies a liberal coating of linseed oil to the masonry to protect it from the weather.

There was one point which impressed me rather forcibly in connection with these lofty stacks, and that was the comparative absence of lightning conductors. When I broached the subject to Mr. Smith, he replied, "Yes, it is remarkable that so few chimneys are protected with lightning conductors, especially when one considers the widespread devastation that would ensue in the thickly populated centres if one were to be struck and the masonry were to be dislodged." Such an accident did occur some months ago at the village of Pendle Forest, near Nelson. During a severe thunderstorm the chimney



THE TALLEST CHIMNEY IN ENGLAND—367½ FEET IN HEIGHT.



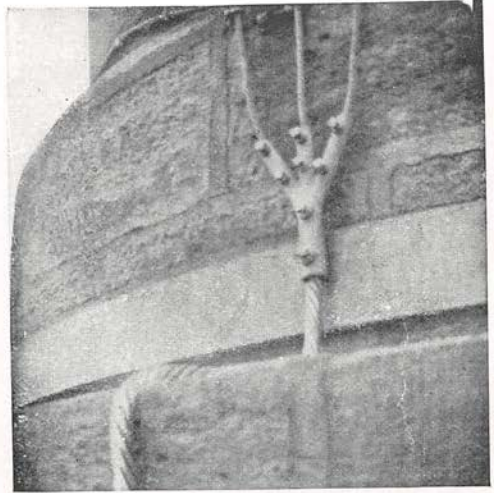
FOUR AND A HALF FEET OUT OF THE PERPENDICULAR.

at the Spenbrook cotton mill was struck by lightning. A huge portion of the crown of the chimney, about eighteen feet in extent, was torn away and hurled through the roof of a shed below, in which the operators were at work. Fortunately, no one was injured, but there were some hairbreadth escapes. One large portion of the *débris* crashed on to a loom, but the weaver sustained no harm further than a shock. Another large stone plunged into a fully charged gasometer, and the gas exploded with a terrific report. The electric current, after passing down through the chimney, played among the looms in various parts of the building, and over seventy were ignited. Had it not been for the prompt action of the weavers in extinguishing the small conflagrations there is no doubt that the whole mill would have been gutted. As it was, damage almost to the extent of £600 was inflicted. Several of the mill proprietors, however, recognising the risks they run with unprotected chimneys, are having lightning conductors affixed thereto, so that injury arising from such accidents is now reduced to a minimum.

"What do you consider is your most



THE LANCASHIRE STEEPLEJACK AT THE SUMMIT OF THE TALLEST CHIMNEY IN ENGLAND, AND—



HOW HE FIXED THE LIGHTNING CONDUCTOR.

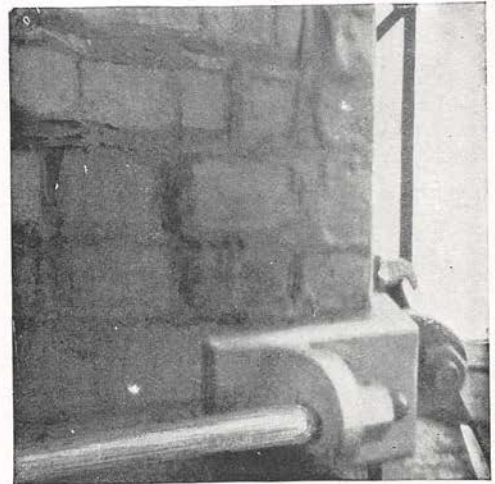
remarkable contract for the repair of a chimney?" I asked.

"If you mean as regards dimensions," replied Mr. Smith, "it was undoubtedly the complete restoration of a massive chimney at Bolton. This stack, which is the property of the well known machine manufacturers, Messrs. Dobson and Barlow, exceeds the height of St. Paul's Cathedral, towering as it does 367½ feet into the air. It is the tallest chimney in England and the second tallest chimney in the world, the premier honour in this class resting with the famous Townsend stack of Glasgow, which is 489 feet

high. The following details will convey some idea of its mammoth proportions. It is octagonal in shape, and measures 127½ feet in circumference at the base, tapering away to 34 feet in circumference at the top, while nearly 1,000,000 bricks and 120 tons of stone were utilised in its construction. Having successfully laddered the stack from top to bottom, and erected the clip and pole scaffold around the summit, I found that the height was so great that it would not permit me to haul up the necessary repairing materials from the ground, as the ropes were drifted about in all directions by the wind.



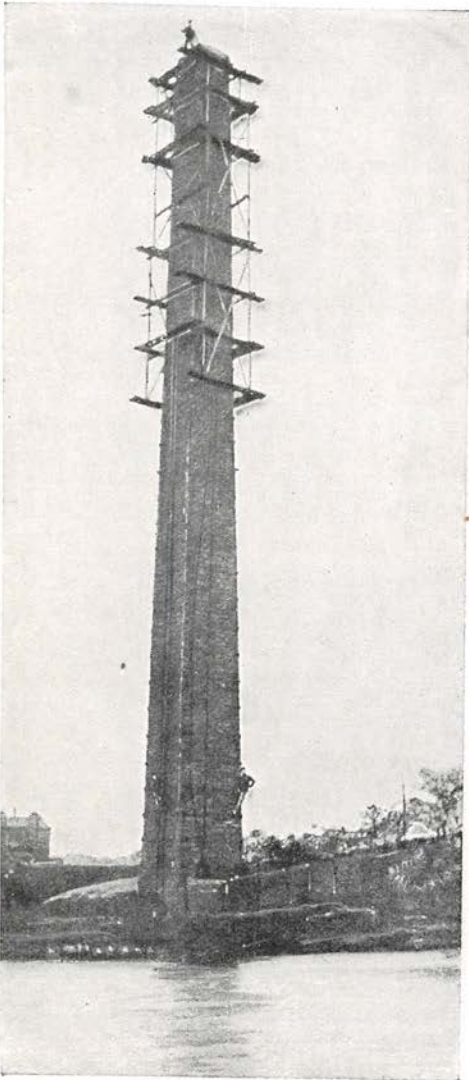
UGLY CRACKS EXTENDED DOWN THE SIDES FOR 150 FEET.



THE CRACKS REPAIRED AND THE METHOD OF BELTING AN OCTAGONAL CHIMNEY ILLUSTRATED.

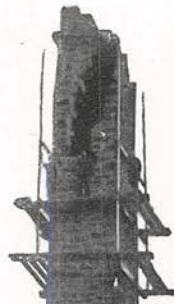
Photos by Mr. Marshall Robinson, A.R.I.B.A., Bolton.

I therefore erected a series of scaffolds half way up, and thus overcame all obstacles." Something like eight months were occupied in the work of restoration, which cost over £2,000. These repairs, by the way, were in progress during the Queen's Jubilee of 1897, and Mr. Smith, acting upon the suggestions of the late Sir Benjamin Dobson, the head of the firm, fixed eight electric arc lamps at the top of the scaffolding. The illumination proceeding from these lamps, which represented an aggregate of 1960 candle-power, was most effective at night, and the stack was thus a conspicuous beacon for many miles around. The minute speck to be seen at the



LENGTHENING A CHIMNEY,

very tip-scaffolding is steeplethought a flag, for of the t h i s he would *f i r m a*, Through Mr. Mar- the well- who was satisfac- the task, give il- chimney Though adverse photo- m o r e ruinous ney than



top corner of the ing in our illustration the intrepid jack himself, who no more of waving the sole edification photographer, at dizzy altitude than have done on *terra* 380 feet below. the courtesy of shall Robinson, known architect, responsible for the tory completion of we are enabled to lustrations of the at various points. taken under circumstances, the graphs convey a graphic idea of the state of the chimney words could give.

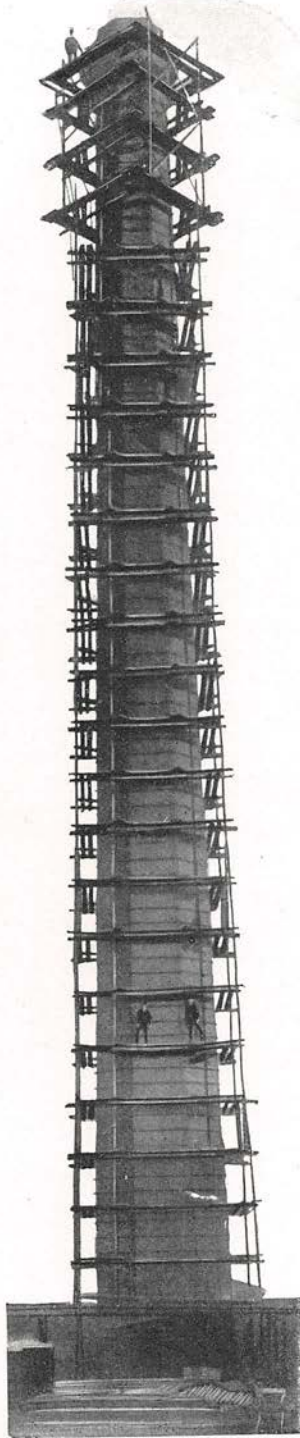


AN UNPROTECTED CHIMNEY THAT WAS STRUCK BY LIGHTNING AND REPAIRED BY MR. SMITH.

While we were in Heywood, Mr. Smith showed me what may almost be termed the English "Pisa tower"—the leaning chimney. It certainly is the most crooked chimney in England, and when viewed in the same manner as shown in our illustration the effect is decidedly striking. It looks as if it must inevitably topple over, but Mr. Smith assured me that it is as safe as the straightest stacks. The proprietor exhibits a keen pride in this building freak, and spares no money upon its continual repair, so that the neighbouring inhabitants shall have no cause to doubt its stability. "No, I am completely at a loss to explain why it assumed this strange

position," commented Mr. Smith. "It listed over directly after its completion, but all I can say is that during the twenty years it has been in my hands it has not moved a quarter of an inch, notwithstanding the fact that it is 195 feet in height and represents a dead weight of 2,000 tons." The steeplejack could not satisfy my curiosity as to how much it listed from the perpendicular, but judging from our illustration it must be several feet. At any rate, the crooked chimney constitutes a "lion" of Heywood.

"One of the most perilous undertakings that I can remember in connection with chimney work," said Mr. Smith. "was the straightening of a large stack, 200 feet high. It was as much as 4 ft. 6 in. out of plumb. No, the reason for the listing was not through faulty construction, because the chimney itself was in sound condition, but the foundations had subsided on one side, causing the chimney to heel over to the extent shown in the photograph. I may tell you that when a chimney deviates as much as four and a half feet from the perpendicular it is a serious matter." To straighten the chimney the steeplejack removed a course of bricks from about two-thirds of the convex side. As he withdrew the bricks iron wedges were temporarily inserted. Sometimes the removal of one course of bricks is sufficient to bring a chimney back once more into the perpendicular, but in this case as many as four courses had to be removed. The chimney at this stage was mainly resting upon the iron wedges. Then came the crucial moment. The wedges were withdrawn one by one, and the apertures were filled with a thinner course of bricks and specially prepared



THE CHIMNEY AT THE ATLAS WORKS, BOLTON, THAT REQUIRED COMPLETE SCAFFOLDING IN ORDER TO CARRY OUT REPAIRS.

mortar. As the wedges were removed the whole chimney, obeying the laws of gravitation, slowly and steadily returned to the perpendicular.

This is a particularly anxious time to the steeplejack; for should the cumbersome mass lose its balance, disaster, swift, sudden, and awful in its consequences, must result.

For a steeplejack to balance a huge chimney weighing approximately a thousand tons as nonchalantly as a juggler balances a billiard cue on his nose is no mean achievement. Still, Mr. Smith never allows his presence of mind to desert him, and the chimney was returned to a perfect plumb-line without the slightest hitch and without the fracture of a single brick above the line of cutting. Another chimney, upon which Mr. Smith similarly operated in a successful manner, was 3 ft. 1½ in. out of the perpendicular. In this case the deviation was the result of building the stack in too close proximity to a well, which caused the foundations of the stack to subside. Indeed, it speaks volumes for Mr. Smith's ability and care to say that in the hundreds of difficult and perilous tasks upon which he has been engaged he has never experienced an accident.

In addition to chimneys, church spires attract a certain amount of the famous steeplejack's attention. One of his most notable achievements in this direction was the Darcy Lever Church, in Lancashire, which has the peculiar distinction of being the only terracotta church in England. The lightning-conductor and spire were in need of repair, and so scaffolding was erected to accomplish the work. The same principle of scaffolding applies as well to spires and towers as to chimneys.