

THE BLACKPOOL TOWER ASCENT

EVERY day of every week for at least seven months of the year thousands of pairs of eyes gaze skywards in the gay, bustling seaside resort of Blackpool. They are focused on one of Britain's best-known landmarks—Blackpool Tower—and usually they rest not merely on the huge outline of the building itself, but on the twin lifts which glide smoothly up and down between the massive, Meccano-like girders which rise hundreds of feet into the sky.

The Tower itself is, of course, world-famous, not only because of its structure, but for the widely-varying pleasures offered to visitors in the buildings which surround the Tower itself. In my schooldays, as each Christmas came round, we made what was almost a pilgrimage to the Tower each Boxing Day, thrilling at the sight of the glistening Tree whose branches reached to the very top of the lofty Tower Ballroom. In those days, your admission ticket entitled you to a gift from the tree, the presents being arranged in various sections so that, according to the "luck of the draw", you might get a box of soldiers, a book or a gleaming model battleship.

But the Tower's delights are known to countless thousands of people. I want to put the spotlight on what the building represents in an engineering sense for, without doubt, its erection—which swallowed up 2,493 tons of steel, 93 tons of cast iron and 5,000,000 bricks—was a triumph of skill and labour and a tribute to those who had the foresight to build it.

In particular I want to introduce you to the machinery which hauls the lifts up and down the Tower. If one might digress for a moment, I suppose there never was a Meccano boy who had a sufficiently large outfit who did not attempt to build the Blackpool Tower—or its French counterpart, the Eiffel Tower—and I will wager that in either case one of the great attractions was to fit moving lifts inside the building.

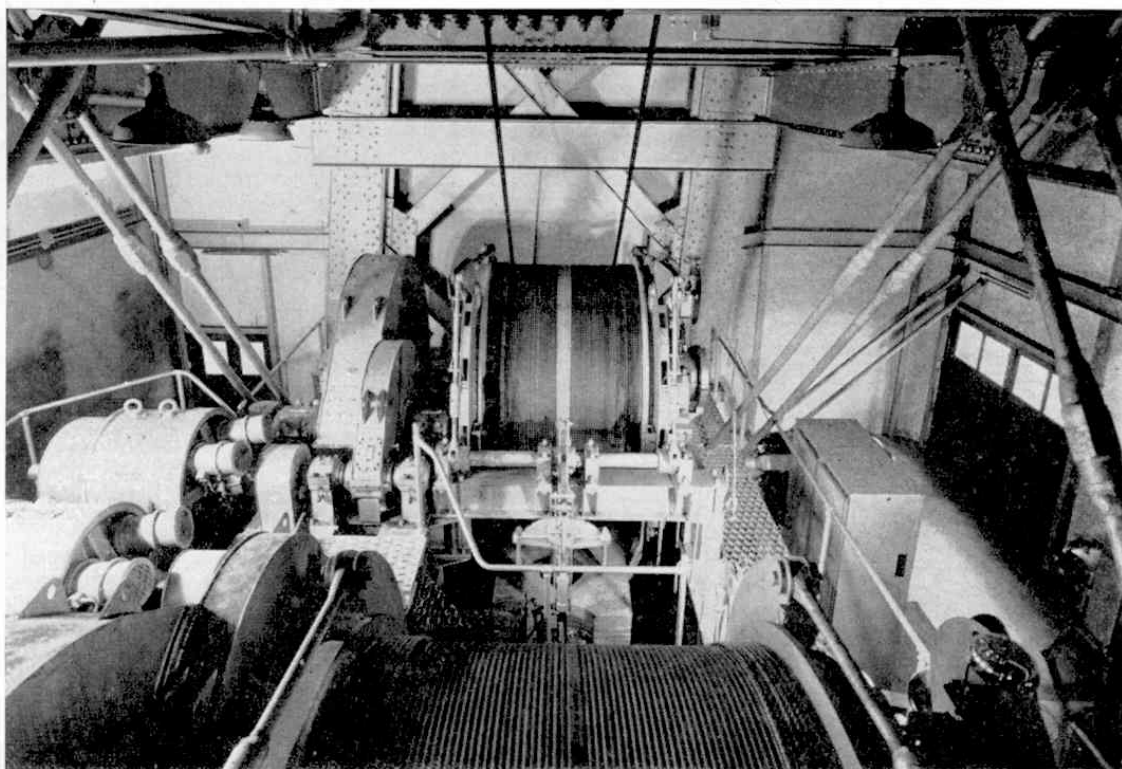
The huge cars which make the Blackpool Tower Ascent hold 24 passengers and a driver. For 60 years they were operated by hydraulic equipment, but at the end of that time, in 1952, it was decided to discard the old system in favour of one which was electrically-operated. The conversion began in that year and was finally completed in 1957, and during the whole of this period no running time was lost. The main contractors for this scheme were the Otis Elevator Company Ltd., and the Sub-Contractors Messrs. Robey's of Lincoln, the Otis Company being responsible for the electric equipment, generators, control panels, etc., and Robey's for the main winding drums and brake system.

When it was decided to install the electric equipment it was necessary, because of its size, to build a new lifthouse on the roof of the building, and since this position was not accessible to the street every item of equipment had to be broken down and carried up through the building into position.

Above: Blackpool Tower from the seaward side. One of the lifts can be seen just beneath a cross girder near the top. Right: Looking up one of the lift shafts. Stairs used for maintenance are clearly visible. These photographs, and that on the opposite page, are published by courtesy of the Blackpool Tower Co. Ltd.



Inside the Tower Ascent control room. Photograph shows the two huge winding drums that regulate the rise and fall of the lifts.



I was able to see this fine new haulage system one day in early October when, during a business trip to the Fylde coast, I visited the Tower Company's famous building.

It was a cold, blustery day as I drove along the seaward route to Blackpool and a rising wind, which was later to turn into a near-gale, lifted the sand from the dunes which lie between the sea and the main road and hurled it into the roadway ahead of me. I could even feel my car rocking with the force of the wind.

At the Tower Building I was received by Mr. Freddie Brown, the Blackpool Tower Company's Publicity Manager, who pointed out that the season was drawing to its close and that the lifts had actually stopped running so that the usual maintenance could be carried out. As you can imagine, this is a very big job indeed on a structure such as the Tower where the girders have to be chipped, scraped and repainted. It may interest you to know that every year the amount of paint used on the structure itself is over four tons of red lead and one and a half tons of red oxide.

I told Mr. Brown how disappointed I was that the Ascent was not working that day, and then came one of those decisions for which the Blackpool Tower Company are famous, for they believe the customer is always right. After a brief conversation on the telephone with a colleague, Mr. Brown turned to me and said, "We are putting on a lift specially for you."

And so it was that, only a little while later, I found myself sitting on one of the plush seats at the foot of the Tower Ascent, waiting . . .

First of all spidermen had to be sent up the Tower to make sure the road was clear, for maintenance had been carried out that morning, and this precaution is always taken before the lift is put into operation. Then a crew of attendants wearing great-coats were summoned to man the Tower Top, and, six in number, they trooped into the lift, when it eventually arrived, with Mr. Brown and myself. Steel blinds were lowered at either end of the cage so that our view was restricted to the windows running along either side. In normal

conditions there would be an all-round view through the two ends of the lift cage.

It was an exhilarating feeling as the cage began its journey. Apart from a certain minor cacaphony, caused by the wind as it rattled the cage, there was nothing at all to worry about.

In almost no time we were at the top: just for the record, it takes the lift about one minute 55 seconds to accomplish this. As we stood there, one could sense just the slightest sensation of movement beneath one's feet and, of course, it is a fact that the Tower does sway in a very high wind. During a 70 mile an hour gale, for instance, the sway is estimated at one inch. For some minutes I looked down on to Bank Hey Street and the promenade, where passers-by looked no bigger than tiny dolls and vehicles like Dinky Toys. Then we were on the way down, but this time our journey was broken at the 85-foot level so that I could see the huge winding drums which haul the cages.

Steel cables

The two lifts are hauled by four $\frac{1}{2}$ inch steel cables with a breaking strain of 20 tons each. From the car to the counterweight are five $\frac{3}{8}$ inch steel cables with a breaking strain of 12.5 tons each. The flying counterweight is suspended by a 2:1 rope, its weight being 14 tons. Since the car's weight is eight tons, this shows the car to be one ton out of balance to the counterbalance, so that the lift car can always be returned to the ground should there be a failure of supply.

The massive winding drums round which the steel cables are hauled weigh about 20 tons each and are eight feet in diameter. The driving motor is a D.C. shunt-wound

machine of 120 h.p. The original cars used in the hydraulic days are still in service, but have been improved in appearance.

Safety devices

There is a rope safety device attached to the car suspension so that in the event of any one of the four main hauling ropes becoming slack, or being out of tension with the lift car, brake shoes are applied to the main structure and the lift is held firm. There are, of course, other safeguards. If, for instance, a power failure takes place while the lift is in motion, a brake solenoid is de-energised and this applies the main winder brakes. Overspeed in any direction is covered by a governor and if it exceeds the normal speed by 20 per cent., the brake is applied. Should the car become jammed in the shaft while travelling upwards, one of several devices will trip the control circuit; if it is travelling down the Tower, the slack rope device operates and trips the control circuit.

Four brake shoes are fitted to each winding drum and are so designed that any one pair will hold a fully-loaded car. Should a lift be made inoperative in any part of the shaft it can be returned to ground level by a hand-operated brake release in the lifthouse.

So far as the public is concerned the total distance travelled by the lift cars is from the 65 foot level, where the Ascent pay box is situated, to the 380 foot level at what is called the Tower Top. This is really a misnomer, for there are three other levels which are open to the public, who must make these further ascents by staircases. The actual apex of the building is the top of the flagstaff—518 feet 9 inches from the ground.