



Photo by De Senham & Co., York.

A TRAVELLER IN THE AIR:

A CHAT WITH MR. PERCIVAL
SPENCER.

BY FREDERICK A. TALBOT.

when, fulfilling the laws of gravitation, it of course dropped to the earth. It was only a primitive experiment, but it sent a thrill of excitement through the whole of the civilised world, and aerial navigation was now considered *un fait accompli*. But more was to follow. Seventeen years previous to the Montgolfiers' triumphant success Henry Cavendish discovered that hydrogen gas is 14·46 times lighter than the air we breathe. Professor Black, of Edinburgh, developed this revelation by filling a bag with hydrogen, and enjoyed the satisfaction of seeing the inflated receptacle rise to the ceiling of his room. Other experimenters subjected Cavendish's

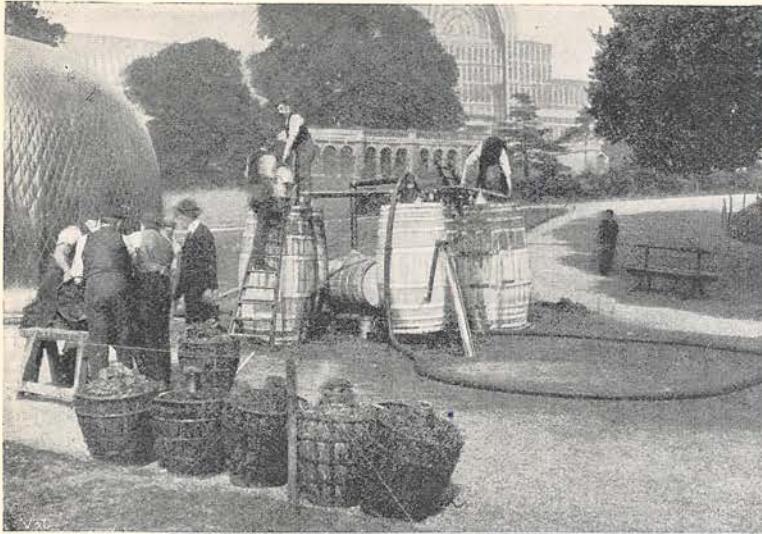
FROM time immemorial the problem of aerial navigation has exercised an immense fascination over mankind in general. Many have devoted their whole lives and expended vast fortunes in the vain hope of being able to reduce it to a formulated science. Yet, despite the centuries of toilsome research and disappointing experiments, the atmosphere still refuses to be governed in its movements by man, and all endeavours to travel contrary to the inclinations of the wind have resulted in inevitable disaster. But man is, after all, a most dogged and persevering animal. Constant, hopeless failures only serve to stimulate him to further efforts. Although no aerial vessel has yet been devised that will place the wind at defiance, and thus establish another highway for travel, one has been constructed that will at any rate float in the aerial ocean, and will follow in the course of the wind with every assurance of safety.

It was not until late in the eighteenth century—1783—that such a vessel was first launched. Two brothers named Montgolfier, paper manufacturers at Annonay, in France, constructed a large paper bag, and inflated it with hot air and smoke from a fire of straw. Directly the bag was released it flew skywards and remained poised in the atmosphere until the air with which it had been inflated cooled and condensed to such an extent that it was no lighter than the air in which it floated,



MR. STANLEY SPENCER, WHO ASCENDED TO 27,500
FEET WITH DR. BERSON.

Photo by Russell & Sons, Baker Street, W.



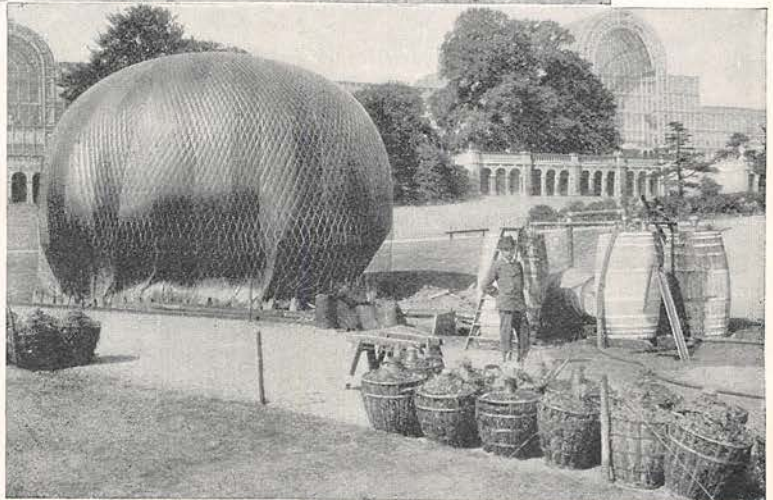
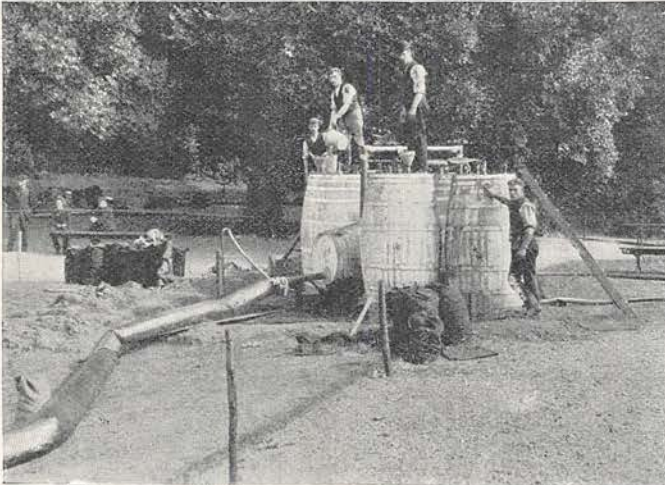
appliances used; but, apart from this, the balloon of to-day, like that of 1783, is simply an abject slave of the air.

The only important discovery of the nineteenth century in connection with aerostation was that of Mr. Charles Green, who found that the ordinary domestic coal gas, though twice the density of hydrogen gas, was sufficiently satisfactory for all practical purposes. It was a valuable discovery, because coal gas is much more convenient and economical than hydrogen.

Although the study of aerostation is indu-

discovery to a far more exacting test. The brothers Robert and M. Charles constructed a balloon of sufficient size to carry two persons, filled it with hydrogen, ascended at Paris, travelled thirty milesthrough the air, and successfully descended without any injury befalling them.

Although more than a century has passed since these pioneers reduced the theory of aerial travelling to a possibility, the balloon of to-day differs but little from that in which they conducted their experiments. Naturally the rapid strides of science have resulted in a perfecting of the various



Photos by]

[Negretti & Zambra.

GENERATING THE HYDROGEN FOR DR. BERSON'S ASCENT.

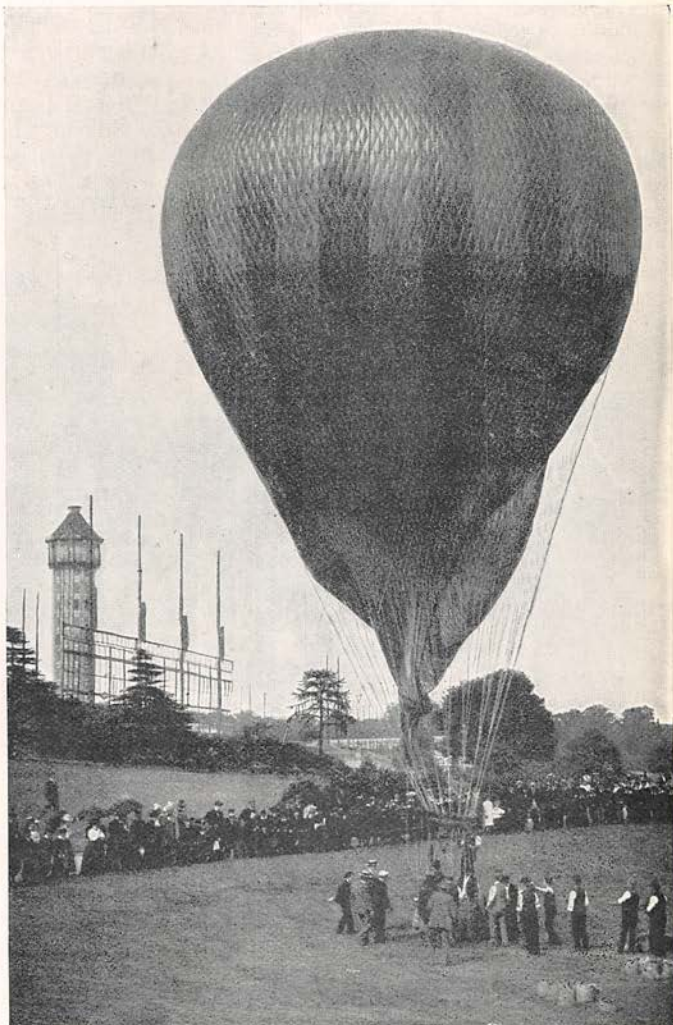
bitably attractive, the number of aeronautical experts throughout the world may almost be counted upon the fingers of the hands. Perhaps the most eminent of these are the three brothers Spencer—Percival, Arthur, and Stanley. Their ascents in all parts of the world, from China to Peru, may be counted by thousands, and at times their experiences have been decidedly exciting. Yet, despite hairbreadth escapes, Mr. Percival Spencer has assured me that he never feels so safe as when travelling through the air in a balloon.

Percival Spencer, who is the eldest of the three brothers, may yet be counted a young man. He is most enthusiastic over his favourite pastime, and is never weary of discoursing upon aeronautics. As to the atmosphere, there is little he does not know about its peculiarities, movements, and variations. When questioned as to what induced him to devote his energies to this unusual profession, he laughingly replied—

“Well, I suppose it is what many people would term ‘hereditary instinct.’ You see, my father was an aeronaut, and my grandfather before him. The latter, in the year 1837, accompanied the veteran balloonist Mr. Charles Green on many trips through the air. I was consequently initiated into the mysteries of aerostation very early in my life, and, from my own experiences in the air, I think it would be difficult to discover a more entertaining field for scientific research.

“No,” he continued in answer to my query; “I have never met with an accident. Of course, one cannot make over a thousand ascents into the air without passing through a few exciting experiences. I remember on one occasion I was requested by the Dutch Government to conduct surveys from aloft, for military purposes, of the province of Atcheen, in Sumatra. The

hostile natives, either terrorised by such an apparently supernatural object floating through the air, or fully cognisant of our intentions, opened a warm fusillade upon us, and to save the balloon from being riddled we had to ascend to a height that placed us beyond the reach of the natives’ fire.”



DR. BERSON AND MR. STANLEY SPENCER LEAVING THE CRYSTAL PALACE.

For the purpose of scientific research in the atmosphere the balloon has rendered invaluable service, and it is difficult to conceive how our *savants* would have gleaned so much information concerning the ether had it not been for the inventive genius of the brothers Montgolfier. Several high ascents have been made for this purpose.

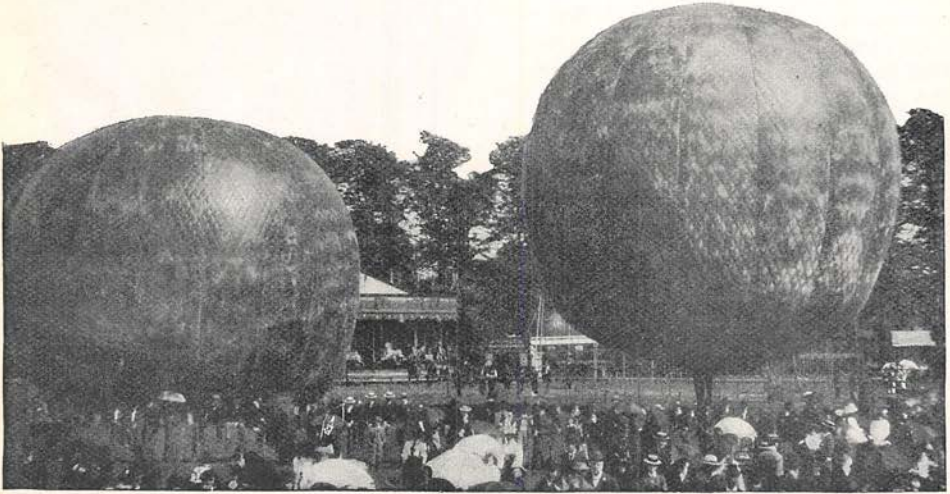
In 1862, Messrs. Coxwell and Glaisher, under the presidency of the British Association, ascended to the tremendous height of 29,000 feet at Wolverhampton. These two aeronauts also claim to have attained an altitude of 37,000 feet—about seven miles—but this statement seems open to question. Even to-day many scientists contend that the aeronauts must have made an error in their calculations. From the reports of the aeronauts themselves, it was evidently an adventurous and memorable ascent. At 29,000 feet Mr. Glaisher was rendered insensible, and when the maximum height was attained Mr. Coxwell lost the use of his hands, and was compelled to pull the valve-line with his teeth in order to descend.

At the Crystal Palace, recently, Dr. Berson,

the quantity. For instance, it requires 1,000 cubic feet of coal gas to lift about thirty-five pounds, but exactly the same measurement of hydrogen will suffice to raise seventy pounds.

“When we made our aerial trip we inflated our balloon, which was of 56,500 cubic feet capacity, with only 30,000 cubic feet of hydrogen. Then as the balloon rose and the gas naturally expanded, there was still available 26,500 cubic feet of space inside the silken bag to be filled before any hydrogen overflowed through the nozzle of the balloon.”

Some idea of the costly nature of inflating a balloon with hydrogen may be gathered from the fact that Dr. Berson's ascent cost over £160. Special elaborate apparatus for generating the necessary gas had to be con-



THE TWO BALLOONS AT THE YORK GALA.

a famous meteorological scientist of the Berlin Observatory, who has projected several scientific observations from the balloon, made an ascent with Mr. Stanley Spencer. They reached a height of 27,500 feet—that is, over five miles high. This is the greatest height that has ever been registered in this country since the ascent of Messrs. Coxwell and Glaisher. Dr. Berson, however, has reached a greater altitude than this, for on one occasion, in Berlin, the balloon rose to 30,000 feet.

“Our ascent,” said Mr. Stanley Spencer, “was accomplished under the most favourable conditions. In this case our balloon was inflated with hydrogen. Of course, this medium is very expensive in comparison with coal gas; but then it is only about half the density, and, therefore, you need only half

veyed to the grounds from which the ascent was made. The hydrogen is generated by the decomposition of sulphuric acid by means of iron. Six tons of sulphuric acid and four tons of iron shavings were consumed on this occasion to manufacture the necessary quantity of hydrogen. The *modus operandi* is as follows: The acid is placed in a tank with a quantity of iron and water. The chemical action at once proceeds with great rapidity, and the hydrogen passes off into another chamber in a very heated and impure state, where it is purified by passing through fresh cold water and afterwards dried by being passed through a vat filled with unslaked lime, after which it is conveyed through the hose-pipe into the balloon.

“It was two o'clock when we left the

Crystal Palace," said Mr. Spencer, in reply to my request for a description of his voyage. "Owing to the delicate nature of Dr. Berson's meteorological instruments, they were slung from the network of the balloon, so that the heat radiated from our bodies might not affect their careful adjustment and correctness. We rose very rapidly and travelled in an easterly direction. This was not quite what we desired, as the wind was carrying us towards the sea, and although we were fully equipped with lifebuoys in case of an emergency, we did not anticipate an immersion in the North Sea with any degree of pleasure. Fortunately, at 10,000 feet we ascended into another current of air travelling south-west. This quite coincided with our expectations, and Dr. Berson at once commenced his experiments.

"At 20,000 feet high the hydrogen had expanded to the utmost capacity of the balloon, and ballast was discharged to continue the upward momentum. The air was extraordinarily clear, and at 23,000 feet we could discern the coast of France, a large expanse of the English Channel covered with diminutive dots, which were in reality the



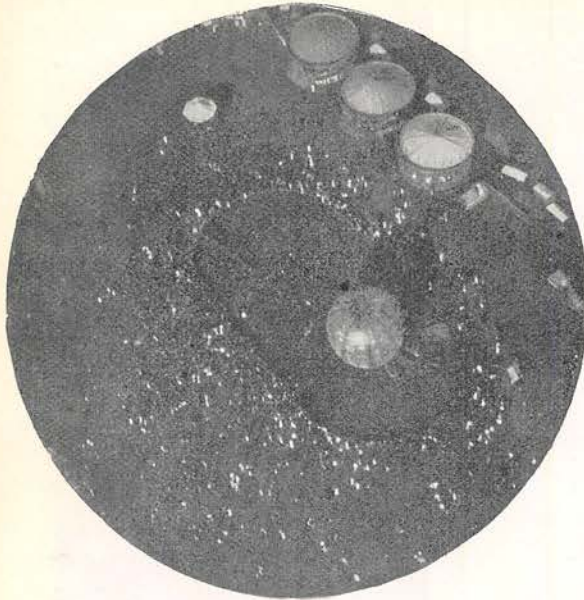
—BUT NO DAMAGE RESULTED.



AT YORK TWO BALLOONS WERE TO ASCEND. THE FIRST BALLOON, IN RISING, COLLIDED WITH THE OTHER—

numerous vessels passing up and down, and the whole stretch of the east coast from Dover to the Wash. Still we continued to ascend, but the air became intensely cold, though we were protected with heavy woollen clothing.

"We looked at our barometer. It registered 25,000 feet—a vertical distance of nearly five miles. At this point a giddy sensation overcame me, and I found it difficult to breathe in the rarefied atmosphere. Dr. Berson, who was busily immersed in his meteorological surveys, gurgled as he breathed. 'Oxygen,' he gasped, and I at once handed him the mouthpiece connected with the cylinder of compressed oxygen which we carried so as to retain our vitality in the rarefied air, while I utilised the other myself. As we inhaled the pure oxygen gas the giddiness was dispelled, but whenever I removed the tube from my mouth the same indescribable sensation of asphyxiation overcame me. The barometer registered 27,500 feet—more than five miles high, and only 1,500 feet short of the previous English record—before the balloon gained her equilibrium. I may mention in passing that at this enormous height the atmosphere is only about one-third the density it is on



THE GALA GROUNDS AT YORK AS SEEN FROM A BALLOON.

Observe the second balloon, nearly full, the three roundabouts, band-stand, show-tents, and the midjet-like spectators all over the field.

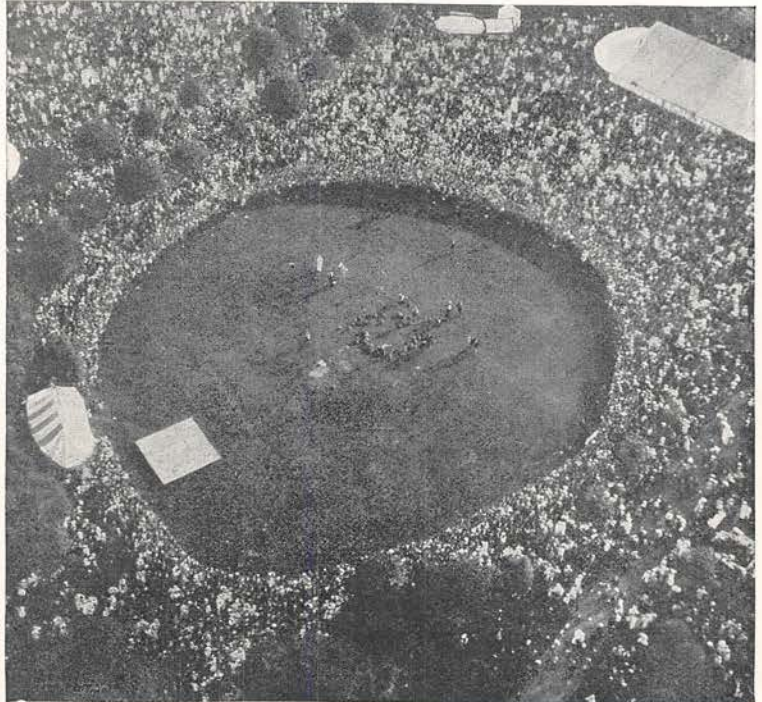
the surface of the earth, the barometer standing at ten inches, whereas it rises to thirty inches on the ground.

"We had only four bags of ballast remaining in the car, and, as these were necessary to ensure a safe descent, I pulled the valve-line and we rapidly fell through the air—in fact, we descended at such a tremendous rate that I had to cast overboard all our ballast in order to reduce our speed. We landed safely, however, at Romford, sixteen miles from the Crystal Palace, after having remained in the air for about ninety minutes. Curiously enough, when we disembarked, there was not sufficient gas in the balloon to keep it up."

"Do you consider, from your success on this particular occasion, that a greater altitude might be safely attained in a balloon?"

"Certainly; I have not the least doubt that had we been provided with a larger balloon we might have exceeded Coxwell and Glaisher's record of 29,000 feet. The ascent proved valuable in many ways. In the first place, from our experiences it was clearly demonstrated that the claim formulated by those gentlemen of having attained an altitude of 37,000 feet is quite untenable. They were not provided with compressed oxygen to facilitate breathing. Now, there is no doubt that had we not been equipped with oxygen, we should have been rendered unconscious at 27,500 feet; and if at this height such an event occurred, what would happen at 37,000 feet? The balloon in which Coxwell and Glaisher attained their 29,000 feet was of 80,000 cubic feet capacity, but then it was only inflated with ordinary coal gas.

With a balloon of 100,000 feet, I think a still greater altitude might be safely



A HUGE CROWD WATCHING AN ASCENT AT WOLVERHAMPTON FLORAL FÊTE.

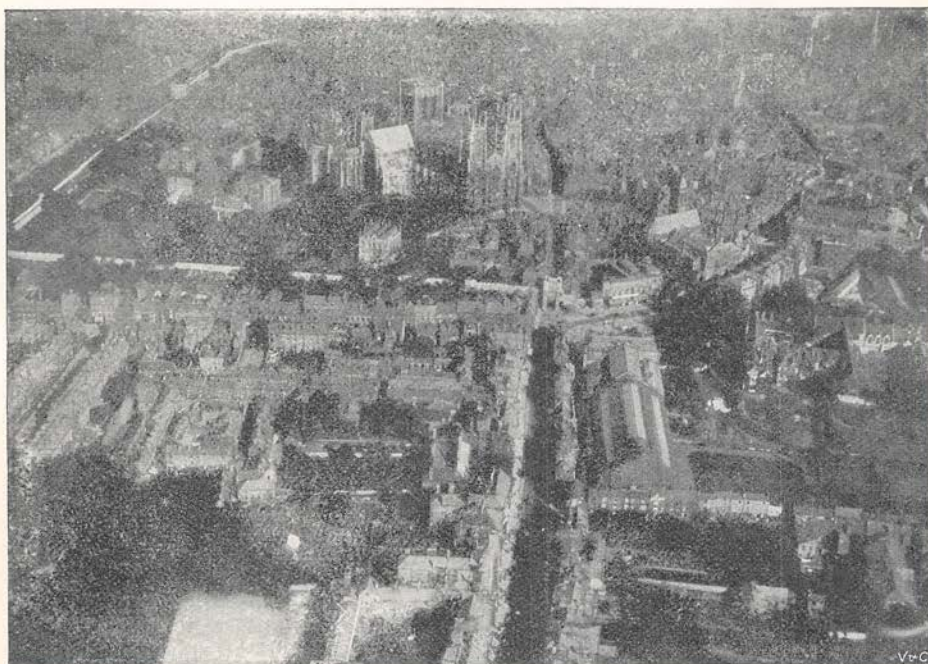
reached, provided, of course, oxygen were carried, as it would be absolutely impossible to live in the highly rarefied atmosphere of such a region."

Such a vessel as Mr. Spencer describes would cost about £500 to construct; but when it is remembered the vast fields open to aeronautical research, and the fame that awaits any valuable development, surely such a small sum should be speedily forthcoming.

Mr. Percival Spencer has made ascents in most parts of this country, and we are enabled to reproduce photographs taken by

at the minute of embarkation, Mr. Pollock—nephew of the celebrated Baron Pollock—who is an enthusiastic amateur aeronaut, and who had previously crossed the Channel by balloon, walked up to Mr. Spencer and suggested that as the wind was blowing in a direction propitious for a cross-Channel voyage, they should attempt the feat.

"Although the balloon was small, being only of 36,000 cubic feet capacity, and we were in nowise equipped for such a special trip," remarked Mr. Spencer, "the wind was blowing north-west at the time; and as I was in the spirit for such an adventure, I



THE CITY OF YORK, SHOWING THE OLD WALL, BOOTHAM BAR, AND THE MINSTER, FROM AN ALTITUDE OF 500 FEET.

him from the balloon on the occasions of its ascents from York and Wolverhampton, as well as those of his Crystal Palace start. Mr. Spencer has accomplished one or two notable achievements in connection with long-distance ballooning. The longest journey he has made through the air is 150 miles, as, for example, on his three trips from the Crystal Palace to France. The last occasion on which he accomplished this remarkable performance was on July 29th of last year. On that day Mr. Spencer had completed arrangements to accompany two gentlemen on an aerial excursion. Almost

hurriedly postponed the voyage for my quondam passengers, and we set off.

"It was half-past two in the afternoon when we ascended from the Crystal Palace grounds. The balloon travelled at a moderate rate of speed, and from our observations of the various landmarks we moved in the ideal direction. Sevenoaks was passed over in an hour at an altitude of 2,000 feet, but we soon rose to 5,000 feet. The day was particularly warm, and the heat radiated from the sun's rays caused the gas in the balloon to expand, while the clouds below kept cool the strata of air in which they moved, and thus prevented our descent into them.

"Tunbridge Wells was duly crossed, and at half-past four the English coastline was visible through the clouds immediately in front of us. Only half an hour was left to decide whether we should descend on the English coast or should continue the voyage. The wind still blew from the north-west, the balloon maintained its altitude, and we had three hundredweight of ballast in hand—in fact, everything augured for a pleasant passage. Under the circumstances we decided

the horizon. We watched it with concentrated intensity. Should we reach it? That was the question uppermost in our minds. At seven o'clock we had dropped to 7,000 feet, but we seemed to make slow progress towards our destination. Difficulties now beset us. We had almost exhausted our supply of ballast, and the heat from the setting sun's rays was decreasing in power, so that the gas began to condense rapidly and the balloon to descend. It was imperative, however, that we should maintain our equilibrium at all costs, and we threw over the bags in which the ballast had been carried. At half-past seven we had risen to 10,000 feet, and were being borne slowly onwards towards our goal. We could distinguish a wide estuary on the low-lying French coast, which Mr. Pollock recognised as the mouth of the River Somme.

"At a quarter to eight, although we had cast all extraneous weight overboard, we sank rapidly to 8,000 feet, and *terra firma* was some ten miles distant. The question was, Should we reach the coast or should we drop into the sea? The balloon gradually sank lower and lower. There was only the heavy grapnel, a mass of seventy pounds of steel, now remaining in the car. We cast this overboard, and the balloon speedily ascended to a height of 12,000 feet, which was the greatest altitude recorded during the voyage. But we only remained poised at this height for a few moments, and then fell through the air at about 500 feet per minute. I slung the camera which I carried on the expedition up in the rigging, so that the films should not be damaged by the water, for on such adventurous voyages as this one has to be prepared for any emergency that may arise.

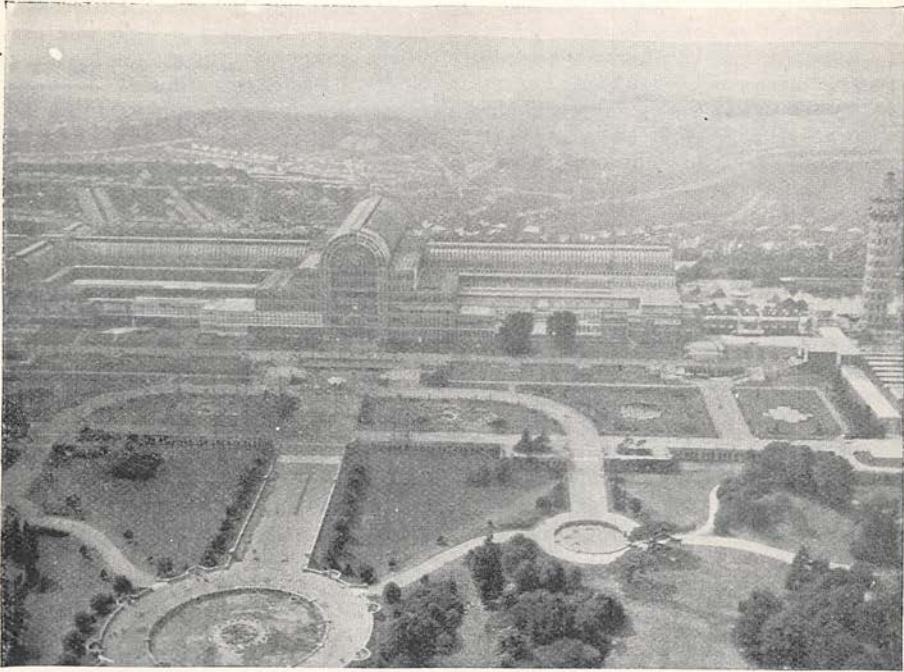
"We continued falling till the height was about 5,000 feet; but now our fears were all dispelled, for we were floating over the land. Preparations were now hurried forward for our descent. At eight minutes past eight in the evening we safely landed at Woincourt, midway between Dieppe and Tréport, and one and a half miles inland. It had taken about five and a half hours to accomplish the journey from the Crystal Palace, at an average speed of twenty miles an hour."



MR. PERCIVAL SPENCER AND MR. POLLOCK LEAVING THE CRYSTAL PALACE FOR FRANCE.

to attempt the crossing. At 5.3 p.m. Hastings and St. Leonards were left behind, 9,000 feet below, and in a short time the English coast was blotted out from view by the clouds. Now there was nothing to guide us on our journey. The silence was oppressive. The waters of the Channel were spread out below us, and appeared dark, desolate, and untenanted.

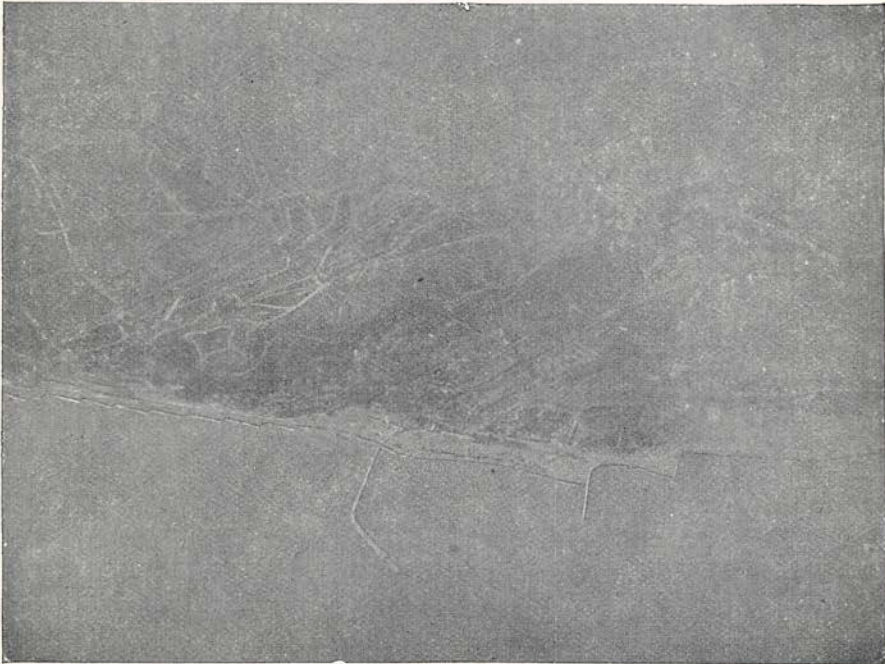
"Mr. Pollock was the first to discern the outline of the French coast dimly visible on



THE CRYSTAL PALACE, FROM AN ALTITUDE OF ABOUT 500 FEET.

Our conversation then turned to the absorbing topic of ballooning to the North Pole, and the bold attempt made by Herr

Andrée to lift the veil surrounding that mysterious region by means of the aerial vessel.



HASTINGS AND ST. LEONARDS, 9,000 FEET BELOW.

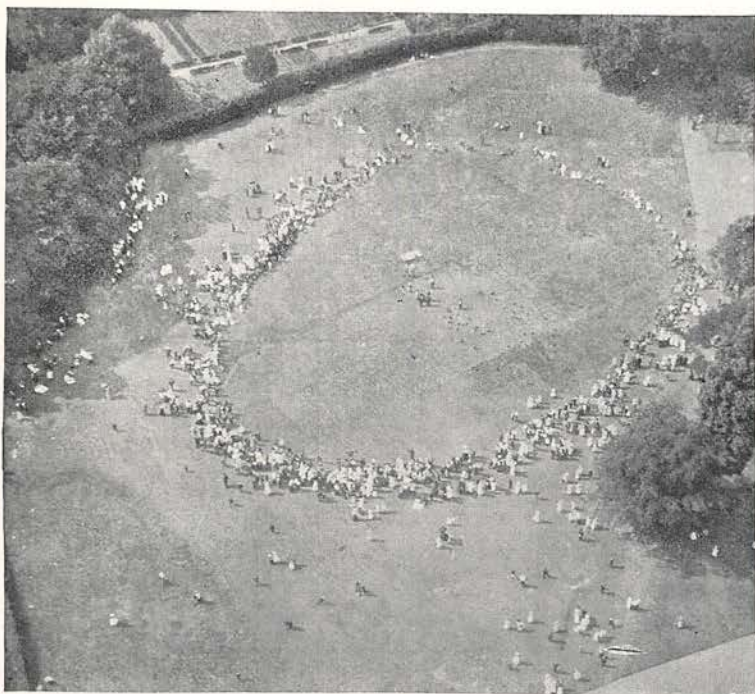
"When Andrée first came to England," said Mr. Spencer, "he paid me a visit, and we had an entertaining conversation on the possibilities of reaching the Pole by balloon. Andrée was most confident of success. Certainly his theories were brilliant, but I am afraid that when reduced to actual working order would be found to be almost impracticable."

"Do you think there is no prospect of Andrée's returning?"

"I am afraid not. Nothing has been heard of him; and as three Arctic winters, with their six months' darkness, have passed by, I think Andrée and his brave companions have shared the fate that has attended so many expeditions which have attempted to explore the Polar Regions. Then, again, there were the reports that remains of the balloon and three bodies had been discovered by the Tunguses, a native tribe inhabiting the Taimur Peninsula, in Northern Siberia. So circumstantial were the descriptions contained in the telegrams from Kras Noyarsk that I had little doubt myself but that they referred to the unfortunate explorers."

"Then do you consider it is impossible to reach the Pole by balloon?" I inquired.

"By no means. In fact, I think it is the only way by which the Pole will ever be gained. But, instead of attempting the whole journey by balloon, I think the latter should be attached to an expedition which should push on as far towards the Pole as possible, establish headquarters at the most northern point for the winter, so that the crew may become acclimatised, and then set off with the first wind blowing from the south in the following spring or summer. I think the balloon should be of sufficient size to carry the weight of a complete sledging expedition—of two men, with necessary sledges, dogs, ammunition, fuel, and victuals. With this load the balloon could set forth, and the Pole would be reached in about thirty-five hours. The aeronauts would then descend at the Pole, would abandon the balloon, and the return journey to the headquarters would have to be accomplished on sledges. One important suggestion is that the gas should be carried in compressed cylinders, and not manufactured on the spot, as in the Andrée case. This would enable the balloon to be inflated at any moment in a very few hours."



THE CROWD THAT WITNESSED MR. SPENCER'S DEPARTURE FROM THE CRYSTAL PALACE FOR FRANCE, AS SEEN FROM THE BALLOON.