MY LIFE AND BALLOON EXPERIENCES.

BY

HENRY COXWELL.

William Woodfall
Th. 16th August 1888.

HENRY COXWELL

From a Photograph by Messrs. Negretti & Zambra.

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WITH

A SUPPLEMENTARY CHAPTER

ON

MILITARY BALLOONING.

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MY LIFE

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NOT far from Rochester Castle, at Wouldham, on the banks of the Medway, I first saw the light of day, at the parsonage house, on March 2nd, 1819.

Should this allusion to my birthplace lead to the inference that I am the son of a clergyman it will not be correct, although I am a grandson of the Rev. Charles Coxwell, of Ablington House, Gloucestershire; but my father was a naval officer who had seen a tolerable share of active service, and who now sought repose in a secluded spot which presented a striking contrast to the deck of a man-of-war, and to those bustling scenes of warfare which he had so far participated in as to sustain personal injury, and to require retirement for the sake of his health.

Before I was old enough to remember any of the first associations of childhood in this rural abode at Wouldham, our family changed residence, so that my earliest recollections date from the time shortly after we had left the parsonage and had taken up our abode on board His Majesty's ship "Colossus," my father having accepted command of the vessels in ordinary at Chatham. Here we stayed for three years, and, young as I was, I do

not forget being ducked every morning from the stage of the old seventy-four, nor the swinging round at tide-time of the black old hulk, and of frequently being pulled ashore in a dinghy to the marine stairs, where a landing was effected on a plank.

In taking a retrospective view of boyhood, the next circumstance which impressed me was my being taken to a school at the marine barracks, where one Sergeant W—— superintended an elementary school for the sons of officers. Our usher, a corporal, was said to have had a Cambridge education, but I suppose he went wrong in some weak point before he enlisted; an under teacher was the master's son, Jack W—— as he was familiarly styled, a precocious lad who betrayed a decided proclivity for the young gentlemen's tarts, so that at last Jack was regarded as a person who could instruct in *meum* and *tuum*, but certainly did not set an example to the pupils in distinguishing between them.

After I had been some time at this school, an event occurred which excited the curiosity of all the boys, and which cannot well be forgotten by those who broke through the rule of not leaving without permission. One morning, Sergeant W—— and the second in command appeared at their respective desks in full uniform rather earlier than usual, and appointed W—— junior to be a monitor, as some important duty, either on parade or in another remote part of the barracks, was coming off. "Mind nobody leaves his seat until we return," was the last injunction as the sergeant marched out followed by the corporal, whose general appearance was more intellectual

than martial; his red-tailed coat and black trowsers were conspicuously a misfit, and as he wore a thin pair of spectacles, no doubt rendered indispensable by university studies, the usher did somehow or other disturb the gravity assumed by the obedient scholars. Jack in office, however, otherwise W—— junior, was fully equal to a demonstrative attitude, and by a vigorous smack of the cane on an old desk, that had never yet felt paint, struck terror among us, so that for a few minutes order reigned supreme. Some wicked wag, however, soon observed that, for his part, all he was afraid of was that Jack would not remain in office up to the dinner-hour, by which certain vile insinuations as to the appropriation of cakes, &c., were conveyed to the nearest boys; this caused an insubordinate titter, which again brought down the sturdy cane, this time with such a threatening thump that its actual use on the hands was held to be highly probable, especially as the talkative lad in the first class again ventured a piece of undertoned information, albeit of a graver kind.

"Don't you know," he said, "it is punishment morning, and the masters have left to witness the flogging."

Now before the lash was mitigated, or abolished, at any rate when I was a youth, military floggings were of such frequent occurrence that punishment morning was generally once-a-week; the elder pupils knew all this, but some of the new boys listened with eager attention, if not with fear, to the announcement.

"Hush," cried one, who heard a tramp on the parade ground, a fact which indicated that the Royal Marines

were at that moment marching down to the rear, where the halberts were invariably pitched, and where five or six privates were not unfrequently strapped up in succession, each to undergo from fifty to two hundred lashes, according to the articles of war, as at that time interpreted. No sooner was it buzzed about what was to take place than one of my own class—I will not name the incorrigible—enquired if there was any chance of having a peep.

"No, it is not allowed," said the big boy, "and anyone found looking out of the barrack windows, commits a serious offence; but if," he continued, with a patronizing air, "you can get behind the green baize near the door, you and I will slip out and see what is going on." An opportunity having presented itself, we deserted forthwith. I was then led to a hole in a window-frame which had been plugged up, and evidently used on former occasions.

The Chatham Division of Marines was now to be seen drawn up in square. The red-painted triangle was ready for the first delinquent, and we readily recognized the portly frame of the sergeant-major whose voice disturbed the stillness of the ranks, by saying, "Number one, strip!" I was struck with the apparent alacrity with which the man took off his undress jacket, pulled off his shirt, and drew his belt tightly round his waist; it was the work of a moment; there was no flinching, and he walked over to the halberts, where his hands and feet were strapped, in a firm way, which was very sensational and attractive to us ensconced youngsters. A drummer was immediately at hand in a white jacket, and the cat hung in his right hand until the sergeant-major cried, "one," when suddenly the

drummer threw himself into positiou, and the cat flourished high over his head and fell evenly between the white shoulders, producing a foul red mark on the fair form which shrugged perceptibly, but less so as the work proceeded, so that by the time the first complement of tweuty-five lashes had disfigured the poor man's flesh, he appeared to be cat-hardened, for no cry or groan escaped his lips, he took his hnndred-and-fifty, and when cast loose, his shirt and a great coat being thrown over his back, he marched off under escort to the infirmary, for another kind of dressiug, with an amount of unfliuching courage worthy of a better canse.

Number two was a different kind of man altogether; he was stonter, and his skin looked redder, there was uo manifest fear in him; indeed, he assnmed a defiant swagger, and looked ronnd as if for approbation duriug the process of securing, uor did the first few strokes make him writhe like his predecessor, bnt no soouer had number twelve sonnded, than a piercing groan was uttered, when the fifes and drnms were called iuto requisition to drowu his shrieks; and theu, it may as well be coufessed, we withdrew to the schoolroom, after witnessing that which did npset us, and was calculated to sicken persons in more advanced life.

The next incident mentally photographed on my miud is one which took place at the village of Gillingham, situated abont three miles from Chatham. Our honse had a commanding view of the river Medway right away to Sheerness. Aftcr leaving the "Colossus," we had taken up our quarters in the neighbourhood where a great

number of officers resided. The guard-ship "Prince Regent" lay at her moorings three-quarters of a mile distant, and my eldest brother, a mate, was on board awaiting a lieutenancy. He frequently came on shore and visited us at home; but he had gone away to some foreign station before the winter of 1827 set in, or he would have accompanied my sisters to the Rochester ball, probably, in the place of my father who generally required a little persuasion on the part of the girls before mixing with the red and blue coats when they were going in for dancing. The forthcoming Rochester assembly was duly prepared for, of course it was a carriage drive, and in those days the return journey was not always considered safe, although highway robbers were getting less frequent; still it was well to be provided with firearms.

A day or two before the said ball, I was myself an eye-witness of sundry preparations in the domestic circle; first, there was the coming and going of dressmakers, and such sort, and on my respected parent's side, there was an inspection of small arms, and well I remember it; the taking down of a naval trophy, very like a horse pistol, which was cleaned, and afterwards charged with powder and ball, but the ammunition was not needed, for the assembly took place, and the girls were safely housed without any adventure.

On their return the pistol had been placed on the top of an old escritoire, and on the following Sunday, during divine service in the parish church—and I may add in our house as well, my mother being an invalid, and a younger sister being therefore called upon to read prayers—just at

this serious moment I was wandering about the house, no doubt in search of mischief, when I espied the pistol, and enquired of Mary the housemaid who was busy bed-making, what that was on the drawers. Mary had enough to do in minding her own business, so that I was requested rather pettishly not to bother her. I insisted, despite this protest in the bed-room, and examined the pistol, asking the domestic to allow me to snap the flint and steel in the direction of her foot. I could not keep in check a desire to embark in this little experimental trigger pulling; of course I had not the slightest idea that my pistol could by oversight or neglect have remained charged, nor was I sufficiently practised in gunnery to see the propriety of examining the pan, or thrusting down the ramrod to ascertain if all was clear. My idea was to strike sparks from the flint, and I did so, but "gracious goodness," as Mary exclaimed when she flew back as if killed—and no sooner had she shrieked than my own mother and sister followed suit—not only had I discharged the contents close to the girl's foot, but the bullet had gone right through the floor, down into the room close to my parent's sofa where she was reclining. What consternation ensued I cannot describe; had I shot anybody or wounded myself? Master Henry was most frightened, I am sure, as the pistol fell from my hand, and I stood pale and amazed, until reassured that no one was hurt, and that I was not supposed to have had any deliberate intention of shooting Mary or my dear mother. It was a close shave for all there, and I required protection on the maternal side after my father returned from church.

"The young rascal," he said, "had no business prowling about on a Sunday morning; it was only a few days previously," he continued in a great rage, "that gunpowder had exploded in his pocket." This was a fact. I had collected some half cartridges which the soldiers had dropped at a review, and was about trying my hand at springing a mine, when my father came in sight, and to avoid detection I thrust a lighted slow match in my pocket, when some loose powder ignited; being now called upon for an explanation as to handling the pistol, I pleaded ignorance as to its being loaded, &c., &c., and as the fault lay really on my father's side, I was pardoned, and I believe kissed by Mary for not having deprived her of existence.

Scarcely six months had elapsed after this first experience of shooting, ere the village talk turned upon a promised balloon ascent from the Rochester Gasworks, by Mr. C. Green; several of my schoolfellows and neighbours were going over to witness the first event of the kind in that part of Kent. My father had determined not to go to Rochester, but to be satisfied with a distant view from Chatham Lines, where I myself, and my brother and sisters, were to assemble on the occasion. I had strict orders to carry with all possible care an old spy glass, of about sixteen inches round by two feet and a half in length. Such a telescope under a boy's arm now would inevitably excite ridicule as to its much vaunted day and night powers. I cannot speak very positively at the present time, though I still possess the said instrument, and occasionally hand it about as a curiosity, on account of its

having been my father's and the one that was taken to the hill overlooking the gas-works to enable me to obtain a good view of Mr. Green's balloon, in the year 1828.

It was my lot on that day, as youngest son, to stand erect with back towards my father, with the spy glass on my right shoulder to admit of his getting the first view of the balloon. "There it is sure enough," was the intimation which only served to make me unsteady and anxious to see what manner of thing a balloon could be. "Steady young gentleman," said the captain, "your sisters and friends wish for a good view. Now then, take your line straight over Master Henry's shoulder, as if you were aiming point blank at that black gas holder, you will see the balloon half full." After our party had taken their turns and had commented on what they saw, I was myself raised to the highest pitch of expectancy, and could not for the life of me get a proper focus or catch sight of the object for some time. At length I sighted the variegated dome, and indulged in a long and selfish gaze; so much so, that other boys with natural longing gave signs of impatience by elbow digs, and at length shook the glass and compelled me to look no longer.

After the inflation was completed, we could perceive the balloon being let up by ropes, and my father volunteered the opinion that persons were in the car, though I question whether the captain knew much of such affairs, or whether he had ever been nearer a balloon than he was that day.

When the partial ascents were over, a number of old naval officers, who appeared to be tired of waiting, gave it

out as their belief that the real ascent would not be long delayed. I remember the steady gaze of my father, as he held up the old glass with a fixed look. He was silent for some time; at length he exclaimed "look out boys," a request we attended to and were not kept waiting as in another ten seconds "she's off, she's off," resounded on all sides, and in less than a minute the balloon had risen high into the atmosphere, and was gliding away over Chatham Dockyard. Before the balloon reached the open sea an upper current perceptibly wafted it inland; it seemed to go on bravely in spite of danger, and many were the speculations as to where it would fall. After being up for more than half-an-hour it was pronounced to be over the Thames, and it could be seen through the clear air until it was reduced to a mere speck. We heard next day that it alighted safely in Essex.

It would, no doubt, be instructive to ascertain how far an imposing spectacle influences the various members of a juvenile community. A balloon ascent seen by children, generally, cannot produce a desire for soaring, or aëronauts would be as plentiful as blackberries. In my case, young as I was, Mr. Green's ascent, created an interest which never left me. It was not long before I invested my weekly allowance of pocket money in sundry sheets of tissue paper, beginning on the housetops with tiny parachutes, and progressing towards a rudely constructed paper Montgolfier, which would not rise, and which did burn, so that my first efforts, like those of most boys in aërostatics, were unsuccessful; but, being taken with the amusement, I stuck to it, not persistently, but with

frequent flashes of enthusiasm, which are evidence of a strong taste in that direction.

But there were other exciting pastimes in our sea-port town which soon proved as attractive as those miniature balloon experiments. I must advert to a few of them, after stating that it had been deemed a fit and proper time to remove me from my first school and to place me in one of a higher class, kept by the Brothers B——, in Gibraltar Place, Chatham. The boarders and day scholars of this establishment were of a mixed character, that is to say we had the military element, the naval boys, and a fair contingent of commercial lads—some from London, others from Canterbury, Dover, Hythe, and various parts of the country. Our masters had first-rate pretentions to classical and mathematical proficiency, and although excellent specimens of good teaching were to be found among our ranks, yet there was one propensity which was very strong among us, and that was pugnaciousness. I regret, even at the present time, to avow that we were known under the sobriquet of "B——'s bulldogs." Not only individually but collectively did we earn and deserve this title; whether it was because there were two or three other schools in our immediate vicinity whose playgrounds bordered upon our own, and which led to competitive trials of strength, or whether it was owing to a martial spirit bred in the very bones of the officers' boys, I really cannot now take upon myself to decide, but that we were continually in hot water there remains no manner of doubt; and when I think of the efforts, the gigantic efforts—if large canes, veritable

cats, and formidable birches are to be accounted as such—that were made to cure us, I am surprised that more of the fire was not taken out of us.

Perhaps in that day and generation we were not properly handled and tamed; something was wrong, that is certain, or we should never have been known as "B——'s bulldogs." It is just possible that some of the more grave and studious of my schoolfellows would object to this undignified portraiture I am giving of a few of our weak points, I beg to qualify my description by adding that it does not follow that one and all were by nature and habits addicted to fighting, but a large proportion were that way inclined, and I may truthfully add, that a certain number were known to belong to a band of volunteers—not such as emulate the regulars in the present day, but to a regiment of young aspirants shouldering wooden guns and going forth to battle, the exciting causes being some imaginary affront or some kind of puerile knight-errantry, which would now be suppressed as unbecoming and scandalous. No doubt certain allowances should be made for the degenerate days of a youth before the Reform Bill had passed; and as one or two of my companions are now staid, distinguished men, long passed the meridian of life, they will not blush at my disclosures, for the history of my boyhood is not designed to include by name any associate. All I aim at is to describe the early scenes of my life, which cannot well be omitted from this narrative, as they really occurred.

As a specimen of the way in which we sometimes spent our half-holidays, that is at the tender age of ten, I will

give the following anecdote, though I had better have passed it over perhaps. On one occasion I had orders to join the small army to which I belonged, as there was some chance of active service being engaged in on those widespread Chatham Lines, where the members of our little force might, it was thought possible, on a certain Wednesday afternoon, be provoked into mimic warfare. We had recently, when exercising, suffered insult from the wild half-ragged boys of Brompton, who were mostly soldiers' sons, and had a grudge against us on account of our superior personal appearance, no less than for affecting to be armed and equipped as if we were men, and equal to doing battle as such if need be. Well, the said boys guessing that we should be out for drill not far from the trenches had there assembled.

We fell in regardless of these tormentors, and Colonel H——, that is our superior officer, who was the son of a live infantry Hibernian colonel, had given orders to "ground arms," when with some truth, but much sarcasm, one of the urchins cried out "ground broomsticks"—of course in open defiance to us and our leader, who had Irish blood in his veins.

It was only a few seconds ere our next instructions were to "shoulder arms, and prepare for action." So far from "broomsticks," ours were wooden guns, in fair imitation of muskets, and the officers had swords, purchased from a pawnbroker, unless, as in my case, they had been provided from home in the shape of naval or military weapons, which had been worn by their fathers in the days of Nelson or Wellington. Without much ado

or parley, we were preparing for close quarters, when to our surprise, the enemy opened fire with stones, having provided themselves with these formidable missiles with which they assailed us at a disadvantage.

Colonel H——, though hit at the outset in the hand, motioned us to deploy and fall back temporarily towards the sally-port, with a view of exhausting their resources, before a retaliatory step was taken on our side.

This strategic movement was well timed, as the ragged ruffians redoubled their onslaught, but as anticipated, were soon short of ammunition.

Perceiving at a glance that they were pressing for the bridge, in order to replenish their pockets with stones, the word "Charge" was given, and away we darted at the double, H——, himself, drawing his sword and cutting at the thin air a slashing swish, just to let them see it was the genuine cold steel he was leading us with, but—bless the boys!—away they went, helter-skelter, before our colonel had authorised us to use the butt-ends of our guns if necessary.

They beat us, though, in activity, and kept up their chaff while running away. H——, I remember overtook the ringleader, who had a head like a mop, while his garments, such as they were, happened to be made of patches of old uniforms, partially tattered and torn.

This fellow, with a jeer enough to provoke a saint, exclaimed "Shure we'll meet yer on Saturday afternoon, at Tom-all-alones, ye know the locality, I believe."

"Agreed," replied our leader, who brought us to the halt with no great reluctance, being himself a stout lad of about fifteen years of age.

"We are masters of the field at any rate," he said.

Not one of our party failed to cheer at the unexpected retreat of our opponents; we were ill-matched so far as numbers, and stone-throwing powers were concerned, but as H—— explained, we should have a better chance on next meeting, as the soil was of clay at Tom-all-alones, which is situated below the Brompton barracks, where there were at that time model earth-works, and the sites of recently sprung mines to take possession of.

We agreed also upon the advisability of securing the services of the naval brigade, which had among those enrolled, some schoolfellows, including my brother, who was just fifteen months my senior, and thoroughly in advance of me, and indeed of his years, as regards acts of downright daring.

On the following half-holiday, the combined forces, composed of day-scholars, proceeded in two divisions to the proposed scene of action. As it happened, we were the first on the ground, and no time was lost in taking possession of an earth-work, or rather clay-work, not long thrown up by Colonel Paisley and his Engineer detachment. Guessing what would be the tactics of the rebels, no time was lost in preparing a pile of balls, as in all probability we should be attacked with such, at the commencement of the expected onslaught.

Having added to our numbers since the last brush, we awaited with confidence an attack, nor were we long in doubt as to the arrival of the enemy, as their outposts were descried in the distance, and soon a scattered and disorderly force appeared on the rising ground to our left;

on they rushed, without any apparent organisation, but this time they had sticks in their hands, and some were seeu to have something in their pocket handkerehiefs whieh were slung on oue arm.

The Brompton lads had evidently heard that we were at the plaee appoiuted, but they halted on pereeiving how favourably we had established ourselves, and that we had manufaetured a eouieal heap of clay balls. It was not long before they followed suit, their bull-headed leader, who gave the challeuge, being eonspieuous by his elothes and size. While thus preparing for an attaek they withdrew to a heap of moist clay, where they eould be seen pressing the earth iuto round shot. Some one of ours proposed to sally out and disperse them, but H—— thought we had better hold our own, as possession of an earthwork was nine points iu our favour.

They were quicker and greater adepts at their work than we had beeu, and the chauces were that they would liek us at out fightiug, so that H—— sent, or sanctioned, a sortie by way of diversion, wheu a party of our naval fellows made a dash at them when least expeeted, but in numbers our men, like the six huudred riding at the Russian batteries, were quite unequal to the eontest, and suffered terribly; my brother and several others eame iu bleeding, but our foes were disturbed aud brought to elose quarters, where they resolutely let fly as if they expeeted to dislodge us in no time, but we were several feet above them, and they would have to scale our ramparts before driving us out. Iu less than five minutes the exehange beeame uncommouly smart and hot. I was also disfigured, as the

clay begrimed not only our jackets but our faces and hands.

No great length of time elapsed before it became as plain as a pike-staff that we were getting the worst of it, and no wonder. H—— discovered the reason, "those ruffians," he cried, "popped in stones beneath their clay, we must at them at once; are you ready?"

"Then hurrah, and away, show no quarter."

Down we rushed, the foul play that had been detected animating us with the pluck and dash of adult warriors.

"Let 'em have it," cried H——, unmindful of a wound in the head which caused the blood to flow copiously. I, too, was hit, as indeed were one and all of us, but "onwards boys," was the word, and just as we were on the point of crossing sticks and guns, they fell back suddenly, but not before a personal exchange of compliments came off between our colonel and the burly leader on the enemy's side. In fact H—— closed with him, and laid hands on his throat which brought him to the ground.

This incident gave a turn to the fortune of war, and at the real tug which decides so many battles we were again the victors, most unmistakeably so this time, as it became a total rout, and the ringleader was not released until he rendered up his stick and pledged himself never again to oppose or make light of us while exercising.

It was not very long after this scrimmage that a painful circumstance occurred, and as it concerned three of us who had fought in company, and who were shortly after fated to have a difference among ourselves, I may as well mention it at once. I do so with twinges of regret even

at this distant period of time, as I was led, almost unwittingly, into a fresh squabble which disfigured, I am aware, my early doings.

It was in this wise. My brother who was in the last affair (not an elder brother who was in the Royal Navy), had some high words with my colonel, H——, who had led us twice into action as recounted. H——, by design or inadvertence, had cast a slur on our father—not that I heard it or was aware of it until John, my brother, came in one day and said, "Henry, we are going to fight H——."

"Indeed," I cried with doubt and pain; "what for, he is my colonel, I have had no quarrel with him?"

"Well, it is all settled; he has insulted papa. Here's Johnson, he will tell you all about it, and when it is to come off. Owing to H——'s size and age he is going to take the pair of us."

"You see Master Henry," said Johnson, who was a marine bandsman, and who assisted, when off duty, in our house, "the captain, your father, has been grossly insulted."

"Only you make that clear, Johnson, and I am ready," was my reply.

"Well, you had better step up into my room, young gentlemen, at once, as time is on the wing, and will brook no delay."

The bandsman having disclosed the nature of the aspersion, and the hour having been fixed for the encounter, I found myself with no way of escape consistent with honour and respect for a parent; so that I

may as well make a clean breast of another blot on my life's history by avowing that, the same evening, in a back yard, on suitable premises, rented by one McMollon, a linesman, Johnson had arranged for the meeting to take place; and for the better understanding of the why and wherefore, as also of the respective characters of Johnson and McMollon, I must unavoidably state that these worthies were, to some extent, rivals, as Johnson was in our employ and McMollon was not, though he wished to be. The former, moreover, was a Royal Marine of the Chatham Division, while the latter was of another cloth altogether; and then again the bandsman was a Man of Kent, while the soldier hailed from the other side of St. George's Channel, so that their brogue and tastes were quite opposed.

McMollon considered that H—— had not insulted Johnson's "bhoys," as he accentuated his allusion to us, and the Englishman swore in strong Saxon that H—— had, and that the affair should be fought out.

Preliminaries having been settled, an adjournment took place to Johnson's private quarters, which were located near our back garden, as was McMollon's house and yard, though they were fully a stone's throw apart from the bandsman's rooms and from our place.

On entering Johnson's room, he threw off his coat, and then drew with a piece of chalk a line across the floor, and brought us up to the scratch, as he roughly named the place of demarkation. He then threw himself into a pugilistic attitude and thus addressed us:—

"You are going to face, young gentlemen, a strapping young fellow, whose hit may prove like the kick of a horse.

From what I know of you both, I have no fear whatever of the issue, if you follow my advice; but if he lands his left on Master Henry's nose and his right between Master John's eyes, by taking you apart and dropping on to you unawares, then I'll not answer for the consequences. Now look here! I'm your opponent; please to foot the chalk line, and square up like men. Capital—anyhow as a sample. Now, please not to forget that in round one Master Henry must hit for the wind, and you, Master John, must play for the face—left and right like a sledge-hammer. No. 2 then recovers himself, and next pops in another compliment on the nob, as we call it in the classics; and if you land your blows, as I expect you will, Col. H—— will be taken all aback, and round one will soon be over."

"But hold; look here Johnson," I said, "supposing that when I aim at the wind I catch one in the eye, how then?"

"Oh! that's what we're coming to. If you, after a spurt in sparring, throw your guard well over your face, and butt in smartly at the same time, you score a shot between wind and water, and then the figure head is open for master John. Come now, just go through it."

But without further shocking or harassing the refined minds of my readers, suffice it to say that we were put through these tactics ultimately to the satisfaction of our accomplished instructor, and by the time we faced H—— in McMollon's yard, we came up with an air of confidence which seemed to gladden the bandman's heart.

H——, on being supported by McMollon, merely buttoned his blue jacket, but we, in obedience to Johnson's request, took off ours and then tucked up our sleeves. We cut a poor figure, however, in a physical aspect, as opposed to our big antagonist, who smiled as if he could knock us to pieces, if he were so disposed.

"Faith, be jintle with them, Misther H——" said McMollon, when Johnson—unmindful of swagger—put us forward with calm assurance, and we lost no time in obeying his orders; perceiving that we stood well as to position, he cried out "Now lads," when in I went, to the astonishment of H—— and his second, while my brother hit out well from the shoulder, as told to do at rehearsal.

"Follow up, Master Henry," cried Johnson, "ding dong, go it, the pair of you."

But, at this interesting moment, a manly figure came forward and, pushing our backer aside, he dealt us both two sharp cuts on the back with his walking-stick. It was my father!

"Disgraceful!" he exclaimed.

"How is this, Johnson, a pugilistic encounter?"

"The truth is, it is all about yourself, Captain."

"Eh, what do you say, about me?"

"Well, the fact is, Master H ——, yonder, insulted your good name, and the young gentlemen took it up."

"Oh! that's it; well, I shall return in ten minutes, and if all this is not over I shall be very angry."

Pater then, to the bandsman's delight, went away; an act which was interpreted to mean, "go in and win," which we did in a very short period of time, to the

dismay of McMollon, who now rounded on Johnson, but the royal marine, of the Chatham division, was nothing daunted, though a much smaller man; his coat was off, and he was well to the front in no time.

"Shure the captain's coming; don't get yourself into trouble, now," cried McMollon, and with this excuse he declined to be mixed up in the fray; and it is due to H—— to admit that, after the contest, he explained that his insinuations were entirely misunderstood, and that the Coxwells were far too touchy. This remark had in it some semblance of truth, perhaps, but the explanation being accepted, we shook hands, and were as good, if not better friends than ever.

As a description of my boyish pranks will lead to an inference that the game of soldiers was to me a labour of love, still it must not be supposed that I was indifferent to nautical pursuits and shipbuilding.

There was a fine field at Chatham for youths who aspired to serve their country, and who had a liking for naval architecture. Much of my spare time was spent in the machinery and dockyard departments. The parents of some of my schoolfellows resided in the great naval depôt, and there were about half-a-dozen of us who inherited a strong bent for everything appertaining to the wooden walls of Old England.

We had heard our fathers' stories of sea fights, and cutting out expeditions, of the days of two broad-sides and board, of chasing foreign frigates, and of attacking the combined fleets of France and Spain, until a lively interest in such undertakings was pretty generally felt among us.

Ready access being afforded to see the dry and wet docks, slips, and gun wharf, we were fairly posted up in all that was going forward to maintain, at that time, our supremacy on the seas.

Although the dimensions of Chatham Dockyard have vastly extended since the year 1831, still they were of no small magnitude then. There was generally a first-rate on Number One slip, and a couple of ninety gun ships close at hand, while lower down the yard an eighty-four and several frigates, corvettes, and brigs of war were to be seen in different stages of advancement. The dry docks too—especially a new stone one—were invariably occupied, and in the river there was constantly a vessel in commission, so that we frequently put off to visit the officers, and to watch the progress of fitting out.

We had been observing for some time the completion of His Majesty's ship "Monarch," and were eagerly looking out for her launch, not because it would be a novelty to us —for we seldom omitted such ceremonies—but we had agreed to be on board as she went off the stocks. From some cause, better known to the Admiralty than to us, the launch had been put off from time to time, until we grew impatient. At last we noticed that the cradles were up, and that a coat of yellow paint had been laid on, and finally we ascertained that when the next spring tide served, this splendid eighty-four was destined to take the water.

The day having been fixed, we either obtained or *took* a whole holiday—a half holiday was no kind of use to us. We did not care to arrive with the fashionable visitors who gathered about half-an-hour before the christening. What

we wanted was to be present during the preliminary operations of removing the supports, and splitting out the blocks from beneath the keel, and, in fact, of witnessing the mechanical process of transferring the entire weight of a stupendous ship on to the "ways" down which the "Monarch" was to slide.

From an early hour in the morning every available shipwright was at his post accomplishing this task. It would never do to remove the spars that propped up each section of the enormous hull until the day of the launch; the strain would be too great on the timbers were this done until the cradles are driven tight by wedging, which was just what we took delight in. All hands were summoned for this office, when the blows from a thousand hammers struck home and blended in one harmonious sound.

The master shipwright and Bardoe the pilot were to be seen in company during these preparations. An important personage was Bardoe; he was a bluff, stalwart seaman, with a voice to be heard the other side of the Medway, a Newcastle man by birth, and one to be obeyed, but gentle, communicative, and a decided favourite with us boys.

"Now young gentlemen," said the pilot, "you are here betimes, pray keep out of mischief and mind your heads, they are just going to knock away some of those props; and let's see, you want to go with us, don't you? I hardly know what to say about it to-day; I shall have a large gang of convicts aboard to assist in 'bringing her up,' and my orders are to be strict about visitors." "All right Mr. Bardoe, you'll find room for us I daresay."

The tide was now flowing freely, and the yard began to be astir with strangers. Many persons, quite ignorant of the details of shiplaunching, were seeking information, and with no little pride we undertook to enlighten a few, explaining the principle of launching, and then conducting the inquirers to the dog-shores, comparatively small pieces of timber, but forming the last connecting link, which, being knocked away by falling pieces of iron, admit of the vessel gliding into the stream.

Around the bows, and on either side of the "Monarch," spacious stages were erected for the accommodation of the public. Hosts of civilians in gay dresses were arriving, and what with military uniforms, and a strong muster of blue-coats, appearances were becoming uncommonly lively.

Nor was the scene less stirring afloat, as aquatic parties were rowing hither and thither, and a long line of boats began to take up their positions in close proximity, not without peril, as the swell becomes great when a quantity of water equal to the displacement of a man-of-war is set in motion, and the boats' crews have to look out in case of being upset.

As it was drawing near to one o'clock the Marine band marched down, and began playing inspiriting tunes. We then mounted the last ladder by the ship's side, and caught Bardoe's eye; he was rather stiff with the responsibilities of office, and had just given orders to clear away the ladder which was moving already, so that no further person could enter the ship. "Look alive young gentlemen," Bardoe sung out, "tumble in through

a port-hole"; a privilege which we were not long in availing ourselves of.

A stir with Bardoe's gang of convicts next drew our attention. The pilot had ranged his men to let go the anchors at a given order, and for this they had to hold themselves in readiness. Presently a tremendous thumping was heard under the "Monarch's" bows, and then a cheer arose. "Look out," cried the pilot, "she is being christened"; then all was silent, and a voice was heard, "Are you all ready Bardoe"?

"All ready, Sir," was the prompt response.

Another sound was then heard: "Down goes the dog-shores!" exclaimed Bardoe; then followed a slight tremble from stem to stern. "There she goes," resounded on all sides, as we began moving down the slip with a pace which was at first easy, but which soon became accelerated to a rapid, resistless, majestic descent, increasing as we took the water, so that it seemed as if nothing could check our way until we reached the opposite bank of the river. Bardoe had his eye on the stream, and at the proper moment sung out lustily, "Stand by, my lads, let go," when down fell a huge anchor, and then a second one, which lessened our speed. "Pay away handsomely," exclaimed the pilot. "Port your helm hard." "Port it is, Sir," by which movement the "Monarch" was brought round skillfully, and prevented from touching the river mud.

There were two sentries on board having muskets loaded with ball cartridge, as at times, an escaped convict would swim the Medway and land unscathed on the Upnor Castle

side of the river. Nothing of this kind was attempted, however, on board the new line-of-battle ship which had now entered her proper element, so that we landed in a boat without having witnessed anything more sensational than the launch. A passing reference to this scene may be considered by the reader as inapplicable to the life of a balloonist; but I cannot well omit subjects of the kind, if I faithfully chronicle the incidents of my early life, which I am determined to portray to the letter, even if the general character of my boyhood suffers thereby.

"Why not point out how you progressed with your studies, where you and your friends worshipped, how many prizes you had for good conduct, and such like?" asks a well-wisher to whom I read some of these pages in MS.

"The fact is," I replied, "a very little of that sort of thing will go a long way," and we may come to it by and bye, but as I was a lad of action, and have in after life stuck to my colours, though it was thought I was cut out either for a parson or a soldier officer; I must be true to my bent, and as to pretending that I was studious, or intellectually inclined—well I will not affect anything of that sort, having ever alluded to myself as a practical man; at the same time I do hope, that by being straight-forward as to my plan and intentions, I may not prove altogether dull in this truthful narrative.

"Still harping upon those horrid uninteresting experiences of your early life and doings?" yes, and I must hark back upon a few other wild acts and thereby risk further censure with an obtuseness deserving of reprehension.

In this fresh adventure, I was all alone in my glory, having embarked single-handed in a little practice with firearms.

My first essay with a horse-pistol, already described, when I nearly shot a servant and my own relations, did not produce that dread that might have been expected. Certainly I was now older, and had fought with a wooden gun, had watched soldiers load, present, and fire, but the fright attending my first efforts ought, by good right, to have made me nervous on this score for many a year to come.

In one of my father's rooms which was not marked strictly private, there were some guns, swords, pistols, and a frightful old Spanish blunderbuss with a bell-mouthed barrel and a bayonet affixed, which was kept down by a catch. Whether it was that I had a coarse, depraved taste in occasionally looking over this armoury, I cannot say, but the blunderbuss took my fancy vastly. One day I became bold enough to borrow it for a trial, and I surreptitiously provided myself with ammunition, going among the ramparts in quest of something to let fly at. As may be guessed, I made a poor hand with birds, owing to the bell-mouthed weapon scattering so much. Annoyed at this, a packet of ball cartridge was undone and I resolved to engage in target practice. Following a road which led to the Spur battery, a disused sentry-box presented itself, and as nobody appeared to be about, I made a circle on one side, took aim, and fired!

Just as I was examining the effect, a file of the guard came in sight, and I was sorely perplexed as to how to avoid detection, especially as I noticed that daylight was

let into the sentry-box on both sides; the ball having penetrated through and through.

There were deep trenches on one side of the road and high palings on the other, so that escape was impossible. Only one remedy was applicable, and that was to keep moving with a view of diverting attention from the damaged property; but the corporal was not to be hoodwinked, he instantly detected what I had been at, and challenged me to stand until I was overtaken.

In less than a minute I was a prisoner, and was marched off to the guard-house. Here I was examined by a sergeant and sent with an escort to the upper barracks.

On my way there I became the object of derision. When I was taken into the presence of some officers on duty, I felt my position the more keenly as Major O—— was my father's friend and frequently visited our house.

It was impossible to suppress a smile at my grotesque appearance, carrying as I did the old blunderbuss, and I almost hoped that Major O—— did not recognise me, as he turned his back and looked out of the window.

The offence I had been guilty of having been notified, Major O——, still gazing on to the parade, enquired if any sentry was on duty at the time I fired. The information tendered being in my favour, Major O——, without deigning to inspect me, ordered the sergeant to proceed to my parents, and to request that I should not be permitted to handle so dangerous a weapon for the future.

Slight as the sentence might have appeared, yet to me it was a heavy one, as I was in no way prepared to face my father under the circumstances.

On my way home I explained to the serjeant that we knew Major O——, and I asked if he would mind going in the back way. To this proposition he assented, and fortunately so, as the first person encountered was our cook, who was a Scotchwoman and who espoused my cause, and insisted that the serjeant should take some refreshment ment in the kitchen before lodging his complaint in the parlour.

Cooky then stated that the captain was not at home, but that she would undertake to deliver any message appertaining to my deliquency, when the sergeant stated his orders from Major O——.

The cook observed that it was sure to be right, and that the major would be at our house that evening to a party.

Sure enough the major came, and I saw him, but the cook had failed to see my father, and the reticent major did not allude to the morning's interview, but politely left me in doubt as to whether he knew me or not.

Among the various localities in which in some capacity or another I well remember to have figured, was Gillingham Reach; here we were accustomed to bathe, and three of us, viz., my brother, self, and Stanley R——, a schoolfellow, had been disporting ourselves one day for some time, where the stream ran fast, and I got out of my depth.

R—— was a splendid swimmer, and was far out in the tide, but I disappeared and was beyond the reach of my brother, who, like myself, could not swim.

Fortunately for me my friend Rudd was just in time to save my life, a service which I am proud to acknowledge in these pages with his full name.

Somewhat lower down, at a hard where boats could be pulled up, my brother and I wandered one afternoon with a view of going off to one of the ships in ordinary. We waited for a long time hoping to see a waterman, but as no one appeared we took French leave and rowed away in a flat-bottomed boat which had previously been pulled up high and dry.

It happened to blow a strong westerly wind, but, boy-like, we took little heed of this until we got well out into the middle of the Medway. Then we discovered our mistake, as the wind and tide were setting one way; we missed the ship, and were swept down the river in the direction of Long Reach. All the efforts we made to pull were of no avail, but it so happened that our course was towards the guard ship "Prince Regent." We managed to row as nearly as possible in this direction with a view of obtaining assistance, but the waves were very rough, and had it not been for a seaman who hailed us out of the port bow we should have been carried away to Sheerness, and perhaps to sea.

This worthy, perceiving that we had no control over the boat, sung out lustily, "Pull in shore, my lads," a piece of advice which we were just enabled to put in practice; by so doing, we crossed the river, and, although we were taken a long way on the weather side, yet here we were less exposed to the wind aud tide. My brother then took off his clothes, and pushed the boat up by the stern. It was a long and tedious undertaking, but we got back safely and deposited the boat as we found it, without complaint or even detection.

In the year 1832, my father was taken seriously ill with a pulmonary complaint, brought on by injuries he received in boarding a Spanish line-of-battle ship. Several of his ribs were broken in this action, and he was never able to go to sea again, as it brought on spitting of blood. In the month of June he breathed his last, and as my mother was an invalid, and the neighbourhood was not considered to suit her case, we soon left the seaport and moved to Eltham, which was not far distant from Woolwich, where my eldest brother was previously stationed in a frigate. A school was selected for myself and second brother in the vicinity of Woolwich Common, where young gentlemen, as at Chatham, were prepared for the Military College.

During our stay at Eltham, I frequently used to spy balloons in the air, as they came from some of the Metropolitan gardens. Often have I watched them career along with a degree of interest which fast gained upon me, so that nothing would do, but I must go up to London and see, if possible, Mr. Green.

I was walking out one evening, when an object emerged from the clouds, which was rapidly descending. I perceived the grapnel at the end of a rope, and knew all about it in a moment.

Here was a chance of witnessing a descent. My heart leaped with joy, and I stood still until I made out the balloon's course.

That being settled, I struck out like a hunter over hedges and ditches, and came up at the death before the gas had been exhausted.

It was Mr. Green's balloon! The aëronaut was very

busy, and, as I thought, rather ill tempered with the people for not standing back as he ordered them.

In my anxiety to get a close view, I first came in contact with the celebrated aërial voyager. I was pushing my way to the front ranks, and was looking at the valve, when I was admonished for my pains, and informed that I had better go to Greenwich Hospital. This advice raised a laugh, though I was at a loss to understand the reason, until my personal appearance became the subject of observation; then I perceived the force of Mr. Green's remark.

It appeared that my face was covered with scratches and blood. I had unflinchingly taken the shortest route, and, in my excitement, had bounded through every obstacle that came in my way, even hedges and ditches, so that, without knowing it, I was the veriest object among the crowd, my clothes being bedaubed and torn; whilst my hands and face were scored terribly.

The ardent desire to have a close view of a balloon having been gratified, I now determined to watch the newspapers for the next ascent, and to be present at the inflation; but as aërial voyages were not quite so frequent about this time as they became a few years later, I had to wait some months; and as a change had taken place in my scholastic movements, I was not exactly master of my time, having become a parlour boarder at a fresh school, viz., at Northampton House, Camberwell.

It seemed a very long while before I heard anything in reference to an intended ascent. At last a placard caught my eye as I was out exercising with my schoolfellows.

Mr. Green was going up from the Surrey Zoological Gardens, and as our playground was not more than a mile distant in a straight line, I expected to get a tolerable view, especially as there were some stately elms in our grounds, which I was bent upon mounting.

Long before there was any chance of catching sight of the balloon, I had climbed up the highest tree by way of reconnoitering. The boys generally manifested great interest in the affair; but my zeal was acknowledged to be in advance of the rest, and I was considered an authority on the matter, and looked up to as one who could give information of the proceedings.

Twice had I perched myself on a lofty branch before I could announce anything satisfactory; at last I perceived the top of the balloon and communicated afterwards that it was filling out and getting higher, so that there was a general look-out, and when I signified that she was off, a cheer arose greeting the information, and there was a cry of "bravo Harry," as if *I* had committed myself to the realms of space instead of to the tree top as a mere look-out. Not many days passed before the faculty of imitation was brought into play, so far as we could manage it, in the hour allotted to recreation.

As to a balloon, we could not improvise one of any magnitude, but I bethought me that a car might be manufactured, and that we could attach this to a strong branch of an elm, and swing off as if we were emulating Mr. Green. A wooden construction was forthwith knocked up, and cords attached to take an equal bearing, and then a good thick rope was fastened to the whole and made fast

to an elastic arm of the chosen tree ; a second cord was fixed to the body of the tree by which the car was drawn in and secured. I then took my seat and invited a passenger to accompany me ; it wasn't every lad who cared about the venture, but I found a companion and let go the side rope. We swung out to a considerable distance, and fancied ourselves aëronauts ; but the sport was cut short by the head master who would not sanction that particular kind of ballooning, as he considered it more perilous to life and limb even than a more extended flight in *nubibus*.

On the following Whit Monday I ascertained that Mr. Green was to make another ascent from the Surrey Gardens, and I obtained permission to devote that day to aëronautics. On my arrival in the morning I found that I was the first visitor, and that the gate had not been thrown open. When I had hung about and paraded up and down for more than an hour the gate-keeper took pity on me, and I was allowed to enter ; not of course without paying. I found my way to the spot selected for filling, but no gas had gone in as yet, in fact Mr. Green and some other men were laying the balloon out, which suited me admirably, as I wished, beyond all things, to see the process from its commencement.

I was wondering whether the aëronaut would recognise me as the boy with a scratched face who made himself conspicuous at his former descent. The aëronaut, however, was intent upon his business and anxious to proceed with it, as I inferred from repeated references to an enormous silver watch.

Presently a workman presented himself with a large

iron key to the gas valve, and this man, although a rough lazy-looking fellow, was pronounced by Mr. Green to be the most welcome visitor he had seen yet, by which I took it that he meant no offence to me, but that he was the individual who could render him the most important service. Shortly after the man with the key disappeared, the silk began to rise, and the aëronaut was all astir in allowing gas to flow towards the valve, and to expand the top part first.

I had a good opportunity of noticing every movement that was made, and in my eagerness to gather information I followed Mr. Green about, and almost fancied that he looked upon me as if I were too officious. I would fain have spoken to him, but there was a peculiar curl about his lips which conveyed the idea that I had better mind my own affairs, and leave him to himself. Still there was something strongly characteristic about his bearing I thought, he was very precise and skilful in his manipulations, and looked to me like a man who engaged in his vocation from motives of scientific interest, rather than from those of vanity.

I felt rather glad when the public began to assemble, especially on the arrival of some of Mr. Green's friends, as I heard the passing conversation, and got some information in that way.

"Well Mr. Green," said one gentleman, "who is going up to-day"?

"You are Sir, if you think proper, your twenty pounds is just as good as another's."

This interrogator confined himself to the one question,

only he seemed quite satisfied. For my part I received a wet blanket to all my youthful aspirations. If that is the fee I thought, it will be many a day and year before I can think of ascending.

Although there was a splendid collection of animals to be seen, and many other things besides, yet I never left the balloon until it was filled and away. I question whether, among the young people assembled, there was a more attentive visitor than myself. The only drawback to the great pleasure I derived in seeing a balloon filled, was the appearance and manners of those connected with the undertaking.

I had read of Pilatre de Rosier, a man of high attainments, of Gay Lussac, the eminent French chemist, and of Lunardi, the Secretary of the Neapolitan Ambassador; and I thought that the aërial party I had seen fell short of my expectations in more respects than one; but if the standard by which I ought to have judged was competency and professional aptitude, then I felt that credit for all that kind of thing was eminently due to the Greens.

Some time before my visit to the Surrey Gardens I had been amusing myself in making boats and in fitting them up for a miniature race in a large fish pond.

All my carpenter's tools and shipbuilding knowledge were now thrown aside for Montgolfiers and air balloons. I could hold forth on aërostation and illustrate the principles of that science with tolerable proficiency by the time I was fifteen years of age. But I was devoting too much time to this kind of work, that is, if the opinions of my well wishers and friends were correct.

My elder brother, who was a wise and good man, thought it high time that more serious tastes appertaining to a profession should take the place of mere airy nothings, which appeared to absorb so much of my attention. It was pointed out, that as our prospects in life had been changed through certain property having passed into other hands, and as our interest, owing to the death of my father, was less likely than formerly to get myself and second brother into the navy and army, we should prepare ourselves, if need be, for commercial engagements, which would, perhaps, prove more advantageous and profitable than the kind of occupation we had been led to expect that we should ultimately be engaged in.

Although my eldest brother was a naval officer, yet he was of a philosophical and religious turn of mind, and his actions added such weight to his convictions, that he may be said to have been our second father in all kinds of excellent advice. It was not that he evinced the slightest indifference to any branch of science, on the contrary, he frequently used to converse with me about balloons, and was, to a certain extent, pleased that I had possessed myself of some information on the subject; but he laid stress upon the folly of one in my position thinking very much of such things, and I must needs own that his arguments had their temporary influence, and subdued for a while a passion which was seen to be growing by none more than those who were near and dear to me.

It was the year 1835, when I had shot up a few inches and had changed a blue jacket for a black tail coat, that the reality of life, and the importance of doing something,

came pretty strong upon my mind. My brother John had already been despatched to a counting house in Amsterdam, he had finally given up all hope of going to sea, and knew there was very little chance for me as regards the Army. Family affairs, and what is called destiny, seemed to be dead set against our serving our country, although no two boys ever longed to do so more than ourselves.

My eldest brother, too, had left the service, not on account of natural distaste to it, for no officer was ever more zealous, but, owing to religious scruples, he had resigned his commission just as he had completed a course of study on board the "Excellent."

These slight references to domestic matters being essential, and indeed inseparable from my own life, I mention them—though with all possible brevity.

The tail coat and other indications of becoming a young man, did not produce a positive and settled belief in any special line of life for which I considered myself suited. I was by no means quick in forming an opinion myself. One of my sisters—I had two at that time—used to say I should make a good clergyman. Perhaps I might have done so, many a youth mistakes his calling; but the truth is that I hardly knew what to turn to.

In the meantime I used to indulge, oftentimes clandestinely, in my favourite pastime by visiting the public gardens of London; I should state by-the-bye, only to see what was going on in the aëronautic way.

During the following year something remarkable, in that line, had engaged public attention. It was the building of a very large balloon, at Vauxhall Gardens, by

Messrs. Gye and Hughes, under the personal superintendence, and according to the plans of Mr. Green. This was something new and absorbing, that diverted my fancy from other affairs, and set me reading the papers and talking about the matter, until I became a perfect bore to my associates. I soon learnt full particulars, including the number of yards of silk to be employed, its texture and quality, the cubic contents of the balloon, and how many people it would raise, &c., &c., all of which induced me to believe that everybody was as interested in the affair as myself.

I prattled and enquired, until it occurred to the home minister, in other words, to my elder brother, that some step had better be taken to settle my mind in a solid and business train of thought.

Would I go to Holland, and become a merchant's clerk?

No objection—I would try my hand at it, but I questioned whether I could stand it.

Was there anything to prevent my starting at once?

Nothing particular, only I should like to see the first ascent of that large balloon which was to ascend shortly.

What were such vain and trifling affairs compared with Henry's future prospects? asked my sage mentor.

"Just so, but a week's delay wont make much difference," was my answer, "especially as I have as yet no regular engagement."

"Shall we arrange that you join your brother in September, at Amsterdam?"

"Yes, after the 9th, I shall be ready to leave."

The launching of the Vauxhall balloon was a day "big with fate," and the morning was auspicious; but at two o'clock the weather changed, and from that time until half-past four it rained incessantly. Thirty-six policemen were placed around the balloon during the inflation, each taking charge of one of the cords connected with the network. Forty-one iron weights, of fifty-six pounds each, were attached to the cordage; these were soon three feet from the ground, and the policemen were then compelled to pass their staves through the meshes, to prevent the cords cutting their hands. This combined resistance was, however, found insufficient, and twenty other persons were called to assist. By this time the netting and silk must have absorbed 300 lbs. weight of water, besides a quantity retained on the top of the balloon. The inflation was completed in four hours and five minutes; twenty-four bags of ballast, weighing together 400 lbs., were then placed in the car, and the grapnel was attached with an elastic cord of caoutchouc and hemp, which was designed to prevent any sudden jerk in stopping the balloon.

The aërial party consisted of nine persons, including five of the family of the Greens, besides Captain Currie, Mr. Hildyard, Mr. Holland, Mr. Edwin Gye and Mr. William Hughes—sons of the proprietors of Vauxhall Gardens.

The appearance of the balloon was truly magnificent; and, though ponderous, nothing could exceed its graceful beauty. Mr. Green found that the ascending power was considerably more than he had announced to the public, he was therefore compelled to allow 15,000 cubic feet of

gas to escape before he could release the balloon from its moorings, there not being room in the car for more voyagers.

All being ready, the ropes were loosened, and the stupendous machine shot rapidly into the upper regions. It proceeded at first to the east, but soon took a south-easterly direction.

The gardens, and every avenue leading to them, appeared to be one solid mass of human beings; in fact there was not an elevated spot within two miles which was not covered with spectators.

The course of the balloon was along the Thames, in the direction of Gravesend. The grappling iron first touched ground near the village of Cliffe, in Kent; and, after slightly catching several times, took a firm hold. The voyagers enjoyed themselves much.

This imposing spectacle having passed off satisfactorily, and a large amount of curiosity having been gratified on my side, I was now ready to start for Amsterdam. A berth was secured on board the "Romona," and I left St. Katherine's Wharf in tolerable spirits; but in passing Southend and Sheerness I fell into a dejected mood, when I contrasted my youthful longings with the present mercantile mission to Holland. It was of no use, our interests with the Navy and Army authorities had been neglected, the heads of the family had taken a more serious turn, and it was absolutely necessary that I should do something for my living.

On leaving the Nore and getting well out to sea, our passengers on deck had wonderfully decreased; there was

a stiff breeze on, and the attendance at dinner fell short of the steward's expectations. Those who were equal to feeding became none the less sociable, and I was glad to sit by the side of a communicative young merchant bound for the Rhine. Among other topics, the subject of aërostation was broached by my fellow-traveller; he, too, had seen the ascent of the great balloon, and longed some day, like myself, to have an aërial excursion.

The more we got away from land, the stronger it came on to blow, in fact we had a very dirty night of it, but crossed the bar all right soon after daylight, and got up to Rotterdam about the time we were expected. My brother John, who was there to meet me, proposed that we should go to the Dutch capital by a canal boat: I was agreeably surprised to find how fluently he could chat to the men, and with what apparent ease he smoked an enormous pipe and drank black coffee.

After a week's wandering about Amsterdam, I was introduced for the first time into a counting-house. I made a great effort for some weeks to take an interest in the proceedings and to do as I was requested, but natural aptitude failed me. I did not take kindly to a single duty and became conscious that I was looked upon as a dunce. A sharp bilious attack followed my novitiate, and it was pretty evident that whatever my element might be, I was not in it at that particular time and place.

As the long evenings came on, my brother used to read and translate the newspapers.

About the second week in November he observed some intelligence which was sure to please and excite me.

"Now, do pay attention, Henry," he added, "Mr. Green has crossed the Channel, with two other gentlemen, in the Vauxhall balloon, and landed in Germany."

"Read on, I am all attention John."

I then heard the full particulars of that extraordinary voyage. The result was a balloon fever, which was by no means suited to my position at that time.

My brother and Herr von L—— observed in me a greater distaste than ever to counting-house duties, and I was heartily glad when an unexpected turn in our affairs was brought about, by which we were to leave Amsterdam and return home.

A change of our family residence was the next movement of any importance in my history. We had resolved upon going up to London. My brother John was now provided for, and I was to watch his advancement, and, if possible, follow in his steps, as there would be no difficulty in getting a berth for me.

Eventually I tried my hand at it, but it was of no use; I sickened and gave it up, much to the disappointment of my friends.

Whatever was to be done with me now? That, indeed, was a serious question.

"I think," said an observing acquaintance one evening, as he placed his hand towards his mouth as if in the act of removing some artificial teeth, "I have thought of an occupation that will suit Henry. This morning," he said, "I had occasion to visit my dentist, and he inquired if I knew of any youth of a mechanical turn of mind who would like to become his pupil."

The idea was no sooner broached than it struck me as being in the right direction.

I caught at it and agreed to turn it over in my mind, nor did I fail to do so. Forthwith I waited upon several surgeon-dentists, and at last had an interview with a very clever practitioner, who had formerly been a surgeon in the navy. This gentleman was eminently calculated to ingratiate himself, and to present to my notice the kind of work which a dental student would have to perform.

It was not long before an agreement was drawn up, and I embarked in the undertaking.

The right vein was here hit upon, it was thought. I set to with a will, and ere many weeks had elapsed, I brought home such specimens of workmanship as warranted the expectation that I should soon take to, and excel in my new vocation.

As it happened, both departments of dental surgery became equally attractive; that is the surgical as well as the mechanical. By the time I was proficient and just of age, I became entitled to an amount of cash, which enabled me to order a brass plate and commence business with patients on my own account. I had to form a connection, however, and to bide my time for the coming in of fees.

Unfortunately, perhaps, this uphill beginning left a deal of spare time on my hands, so that ever and anon I required—or thought I did—a little recreation.

In taking up a newspaper to see what was going on in the way of rational amusement, I happened to observe an advertisement of an intended balloon ascent by Mr. Hampton.

This notice, coupled with a desire for change, led me to decide upon an outing. My taste for ballooning grew apace, and soon became a passion. Whenever an ascent was advertised I was almost sure to be there, and, as a strong liking for any adventurous and scientific calling leads to acquaintance with kindred spirits, I became familiar with a number of regular attendants at balloon *fêtes*, and soon acquired a reputation for knowing as much—and some said more—than many of those who had been brought up to it.

From my seventeenth up to my twentieth year I had seen most of the aërostatic sights that had engaged public attention near London. I had witnessed a balloon race from Vauxhall, and saw the aërial competitors come in actual collision without doing injury. I had seen Mrs. Graham ascend and her husband as well. I had seen the great Nassau balloon before and after it took Messrs. Holland, Green, and Mason to Germany, as already described.

In the year 1837 I went into ballooning with a will, and my visits to the balloon grounds were regular, but I was prevented from seeing Mr. Cocking's parachute attached to the great balloon, although I saw it suspended in the air from London Bridge as it bore down Eltham way, and was struck with its cumbrous and rigid convex form, so ill adapted, I thought, to offer sufficient resistance, and to possess adequate strength for reaching the ground in safety.

After the death of Mr. Cocking I saw Mr. Hampton descend in a parachute from Bayswater, and this led to my

becoming acquainted with that gentleman some little time afterwards.

I was disappointed of an ascent with Mr. Hampton, as his balloon "Albion," which was rather small, would only take the aëronaut when I wished to make my maiden ascent. This was the year (1837), a period when I became a diligent student in aërostatics, and, it is not too much to say, that I had shown similar application in dental surgery, indeed I found that all I was called upon to learn was so easy and pleasurable in acquisition that I made light of my duties, and failed not to devote considerable attention to my hobby as well.

One day I met Mr. Hampton in Westminster, full of trouble and anxiety at the way he had been treated by those who had reason, as he alleged, to be his friends. We walked and talked together, entering upon a chapter of misfortunes, which touched me much at the time, and induced me not only to sympathize with him, but to use my best endeavours to assist his cause.

There is no necessity for entering into the way in which he had lost his balloon, suffice it to say that I did all I could to redeem it, and in return the aëronaut took great pains to give me all the information he could about aërostation, and he promised the moment he had a new balloon to take me up with him, and he moreover presented me with a good portrait of himself, the massive frame to which was made by Mr. Hampton's own hands. This intimacy, and the espousal of the aëronaut's cause, drew upon me the frowns of several persons connected indirectly and professionally with ballooning.

Knowing some of Mr. Charles Green's friends I was rather hankering to see more of the air-captain, as the Germans style us, but I knew by experience that "two of a trade seldom agree," and I was naturally reluctant to offend my patron by being intimate with Mr. Green, whose fame was of long standing and very properly universal.

Circumstances soon brought us together, but on meeting I was impressed with the belief that I was regarded as the advocate of an opposition aëronaut, and not as one upon whom Mr. Green would lavish his experience, or whom he would take up either as a paying passenger or pupil. I was evidently considered a dangerous fellow, and as Mr. Hampton had once stated that he thought I should one day become an aëronaut, although at the time I had no serious intention of doing so, this was quite sufficient to cause me to be shunned by all the family of the Greens, or, if not exactly shunned, at least viewed with caution and suspicion.

For three years I was in the habit of meeting Mr. Hampton and of talking over ballooning, until I grew well nigh surfeited with the tongue part of aërial voyaging, and longed for the reality, which was delayed until the year 1844. Mr. Hampton was then enabled with my assistance to start a new balloon, and I had an opportunity of seeing the construction of it. His first engagement with this was at the Old Vauxhall Gardens, in Birmingham, and thither I went to be his companion, but, to my mortification, the balloon would not raise two persons, so that I had to remain on terra firma, and suffer the taunts

of several spectators, who chose to attribute to motives of fear my getting out of the car after having been once in for the ascent.

My third attempt was successful. Mr. Hampton was solicited to make an ascent from the White Conduit Gardens, Pentonville, on Monday, August 19th, 1844, and I was without fail to accompany him.

Many years had elapsed since the ascent of a balloon from these famed gardens; the attraction was accordingly very powerful.

The balloon was filled at the Imperial Gas Works, Battle-bridge, and the car placed on a cart, to which it was secured by ropes; it was conveyed to the gardens by six o'clock on Monday morning, an extra supply of gas being provided to keep up the loss by condensation.

Before the public entered the grounds, it was rumoured by the privileged few who were present that a *Mr. Wells* was to be the aëronaut's companion, as that gentleman had recently been disappointed at Birmingham. Some other persons, mentioning my name, declared that Mr. Coxwell was to be the favoured party.

An appeal was then made to me for authentic information, and as I was now within a stone's throw of my residence in the Barnsbury Road, Pentonville, where I had recently commenced practice, it was expedient I should frankly declare that I had previously assumed the name of Wells in order to prevent anxiety among my friends, and that the candidate *Wells* and the aspirant *Coxwell* were one and the same person.

This being understood, and the motives which actuated

me in taking upon myself an *alias* being respected, Mr. Hampton, at six o'clock, accompanied by Mr. Wells (as "the Illustrated News" recorded it), stepped into the car, and the balloon rose in majestic style, travelling easterly over the metropolis, and descended in a field belonging to Mr. T. Rust, at East-ham Hall.

This, then, was my first real ascent; but such was the amount of thought I had bestowed on the subject in previous imaginary flights, built upon the descriptive accounts of others, that I seemed to be travelling an element which I had already explored, although, in reality, I was only for the first time realising the dreams of my youth. In most respects I found the country beneath, including the busy humming metropolis, the River Thames, shipping, and distant landscape, pretty much as I expected, and had been tutored to see in the mind's eye; but the extraordinary and striking feature of this ascent was the enchanting way in which these appearances unfolded themselves in a manner so opposite to what one would picture by looking at a balloon in the sky. This is owing to the peculiarly imperceptible way in which a balloon rises, and herein consists the difference—the delightful, fascinating difference—between heights accomplished by balloon ascents, and altitudes attained by climbing hills, mountains, monuments, and buildings. In Alpine travels the process is so slow, and contact with the crust of the earth so palpable, that the traveller is gradually prepared for each successive phase of view as it presents itself; but in the balloon survey, cities, villages, and vast tracts for observation spring almost magically before the eye, and

change in aspect and size so pleasingly, that bewilderment first, and then unbounded admiration is sure to follow, and when one reflects that all these wonderful panoramic effects are produced by the noiseless, unobserved, ascension of the balloon, we are reminded of the motion of the earth which rolls us round the glorious sun, and the heavenly orbs, so that they, the sun, stars, and planets, appear to be rising and setting.

It is just so with the balloon—a wide spread carpet of variegated country is changing form, hue, and dimensions, or rather appearing to do so, as the observers rise and descend, and assume various elevations.

Our journey only lasted twenty-five minutes, but it seemed to me when we descended that the balloon had not been more than five minutes in the air. After we anchored I felt that it was a tantalising short-lived piece of grandeur and only enough to whet the appetite for more.

But a second chance was at hand. Mr. Hampton had been asked to ascend from Bromley, in Kent, where such an exhibition was quite a novelty. The undertaking, however, was of too formidable a character for the small gas works and diminutive pipes in that locality. Visitors who congregated in a meadow selected for the festivities were not gratified with the ascent on the day it was announced to take place; consequently fresh exertions had to be made in the production of gas, and not until the following evening was the balloon fit to ascend, and, even then, it would barely take two, so that I had another narrow escape of being left behind after arranging to go. It was necessary to part with very nearly all the ballast in order to rise.

We started sluggishly, but got up two thousand feet, and there had a splendid view over the garden of England, as the county of Kent has not inaptly been styled. Short and sweet was the order of this second trip of mine, but, as we had a remarkably picturesque country to gaze upon, I was much annoyed at not being longer aloft, and I don't know but that I vowed—at any rate the idea flashed through my mind—that I would one day have a balloon of my own, even if it were for unprofessional ascents, as these hasty, short views were most aggravating and by no means worth the expense.

Shortly after my being thus initiated into practical ballooning, Mr. Hampton undertook a tour to Ireland; but there, in Dublin, he had the misfortune to descend near a house, the chimney of which was on fire, and his balloon, blown in that direction by a sharp breeze, ignited, but the aëronaut happily escaped with his life.

It was a long time before Mr. Hampton was in a condition to ascend again. In the meantime other balloonists had made my acquaintanee, viz., Mr. Gypson, and Lieut. Gale, both of whom sought co-operation, and frequently offered me seats in their cars, as some acknowledgment for the advice and assistance I had rendered them.

Mr. C. Green invariably gave me the cold shoulder. I was rather sensitive about this at the time, but in later years, when I began to obtain a reputation for myself, I came to the conclusion that it was the greatest compliment the greatest aëronaut of the day could award me, inasmuch as it indicated that I was somebody to be studiously kept in the background for an obvious purpose.

During the autumn of 1845, I projected and edited "The Balloon or Aërostatic Magazine," a publication designed to advance aërostation. A good reception greeted the little serial on the part of the press, but the demand for information on this subject was not equal to my enthusiasm, and as a monthly repository of travels by air, it did not pay, so that its periodical appearance was discontinued, and afterwards it was only published occasionally.

In the year 1849, three new balloons were constructed by the aëronauts, Green, Gale, and Gypson, respectively. Mr. Green, junr, also made one about this time, intending to use it principally on the continent.

With two out of these four balloons, I had a great deal to do, as will soon be seen.

Let us commence with Mr. Gypson's, as it was the first on the stocks, and the first to make a perilous ascent and descent. When this balloon was finished, Mr. Gypson and myself determined upon a private ascent; we desired a long trip, and would not even object to cross the Channel, if the breeze should waft us in that direction. The Imperial Gas Works, at Haggerston, in London, was the place we started from. The new machine was taken there to be inflated on the day selected, which was favourable, the wind being from the S.S.E., so that we had a long run before us, and a good opportunity of reaching Scotland.

Owing to the close proximity of the balloon to the gas-holders, the filling proceeded very rapidly; it appeared to me that the inflation should be checked somewhat, but

the aëronaut considered his arrangements equal to any pressure that could be put on by Mr. Clarke, the gas-engineer. It was soon evident that the network was not liberated so quickly as it should have been; the consequence was that a lateral and unequal strain began to be imparted, and just as I had gone away to speak to some gentlemen who had arrived, by invitation, the netting began to break towards the lower part, but the damage was not apparently sufficiently serious to prevent the ascent being made. We therefore got into the car, and notwithstanding several broken meshes, prepared for a start, but while sitting in readiness, a sudden gust drove the silk with considerable force towards the fractured cordage, which continued breaking, until the lower part of the silken bag protruded, and then, the entire balloon surged through the opening, leaving the network behind, which dropped on our heads, so that the balloon itself escaped, leaving us in the car to receive the ironical congratulations of our friends, who had come to see us go up.

Not many seconds after the silken bag had bounded away, it split up, and descended in a brickfield, not far distant. It is almost impossible to imagine a more ridiculous position for expectant voyagers to be placed in than this.

The assembled spectators pronounced it a mercy that we had not ascended, and that the breakage had not happened in the air. They believed we must have been killed had not the balloon escaped just when it did; but I was of a different opinion, believing that if once we had got away, no bad results would have occurred while we were travelling aloft.

The balloon was forthwith repaired, and a second private attempt made on March 18th in the same year. This time we had a successful day, and came down all right at Hawkhurst, in Kent, not far from the residence of Sir John Herschel. In the evening we were invited to Collingwood, where we spent a most agreeable and instructive time with the eminent astronomer.

Soon after this event Lieutenant Gale's balloon was launched at the Rosemary Branch Gardens, Peckham.

Here, too, I was invited, and almost persuaded to make the first trip; but as I had condemned certain new fashioned valve springs, which I considered unsafe, I preferred to witness rather than participate in the ascent. Mr. Gale wished also to use a pair of supplementary small balloons to receive the expanded gas; but these, I thought, were open to objection, so that I could not possibly join the lieutenant at the time he was applying appurtenances, which I had pronounced dangerous.

The balloon, a very fine one, was duly filled, and the ascent nicely made. A Mr. Burn took my place, and I was rather joked, I remember, when the new balloon floated majestically in the still atmosphere.

Events, however, soon took a sudden turn. Gale had promised to travel far down towards the coast, and had, it appeared, suddenly altered his mind, as the balloon began descending fast.

"Perhaps," said some one, "he has forgotten something as it is coming down so soon, and will go up again and continue his journey."

But the rate of descent increased so rapidly, that

Mrs. Gale ran to me and inquired anxiously for my opinion.

I was obliged in candour to say, as I was considered an authority, that I feared the flat valve springs had not quite answered Gale's expectation; "but he will be all right," I said, encouragingly, "even if he has a good bump."

Ballast was soon observed to pour out profusely, and there was no doubt of the voyagers being sensible of the frightful pace at which they were coming down. The lower part of the balloon was seen to contain no gas, so that its collapsed condition was visible to every one present.

Several persons started off to see the cause of so sudden a descent. As to myself I remained with Mrs. Gale, making light of what really looked serious, in order to allay her alarm.

A messenger soon arrived to say that neither the aëronaut nor his companion were seriously hurt, but that they alighted with terrific force at Peckham Rye, owing to the valve-springs not having acted properly.

Gale, himself, soon put in an appearance, inquiring for me. He said, "You are quite right as to those springs; I will abandon them, and you shall ascend next time."

It was not long before I did so.

Pleasure gardens in and about London were rather numerous in the year '47, and the Royal Albert Grounds, near Hoxton, were just in their palmy days. It was here I made the next ascent with Lieut. Gale, and one or two with Mr. Gypson also; but as these gentlemen were competitors for aëronautic fame, I was constantly risking the displeasure of both by not adhering entirely to one.

During the same summer I made a variety of aërial journeys with each of these aëronauts, but, two especially, were connected with considerable personal risk.

The first was with Lieut. Gale, when we descended in a rough wind in Gloucestershire, after having started from Bristol.

A new fangled grapnel was used in this trip, and one ill-adapted for arresting the progress of a balloon in a strong wind. It was on the ball and socket principle; but the socket, which was of brass, was inside the crown of the prongs. I prophesied before any strain was thrown upon the grapnel that it would break. It did so in trailing over a field, when the balloon dashed into a large oak tree, cutting asunder a thick branch, which ripped the silk from bottom to top, so that the gas escaped instantly, and we pitched to leeward of the tree with no trifling concussion, by the way, but got no broken bones or serious injury.

The second affair was, without doubt, the most perilous descent in the annals of aërostation.

In the year 1847, the far-famed Vauxhall had not altogether lost its *prestige;* but still, exciting amusements were indispensable to it scontinued existence, and aëronautics had enjoyed long-continued popular favour in that establishment. But a nocturnal voyage with fireworks displayed under the balloon, was not of frequent occurrence, and a night ascent with Mr. Gypson's balloon was decided upon as an opportune attraction.

My own seat in the car was owing to special invitation on the part of the proprietor, but two other candidates—

viz. Mr. Albert Smith and Mr. Pridmore, only secured places on the afternoon of the ascent.

Mr. Albert Smith at that time was a popular writer; and, as he had already made a day ascent, he wished to see London by night, and to give an account of it to the public.

When the balloon was filled during the afternoon, in the Waterloo Grounds, the air was calm and hot, with every prospect—as far as appearances went—of a fine summer evening. It was just the sort of weather for an aërial journey in the dark, there was no rustling of leaves, or wild gusts to induce the least apprehension of a disagreeable landing.

The inflation was completed with the utmost ease, and just before the variegated Vauxhall lamps were lighted, a circular framework, with Darby's fireworks attached, was duly placed in position, so that it could be fixed on when the moment arrived for starting.

About this time it was observed that the atmosphere became oppressive, and that a threatening murky mist arose in the east; not long afterwards, distant thunder rumbled, and people began to scan the firmament, as if it looked uninviting, and as if the terrestrial sight-seers would be safer that night than the air explorers. As for us, we drew together and exchanged opinions, like mariners before leaving a port when dirty weather was looming on the horizon.

The lessee of Vauxhall Gardens, Mr. Robert Wardell, having noticed lightning playing over the city, came forth, with other interested parties, to look around him; and

soon a grave discussion was going on near the car, for the storm was fast brewing, and there was doubt as to whether it would be safe to venture. In the midst of great diversity of opinion, a direct appeal was made to me, and I gave it in as my conviction that, if the ascent were made quickly, and everything well managed, there need be no apprehension.

The fireworks—weighing over 60 lbs.—were now connected, and gentlemen were requested to jump in; for my own part, I decided upon jumping up on the hoop, so as to see the neck clear, and report to Mr. Gypson when the upper valve required opening.

I had never made a night ascent previously, but had formed my own opinions as to the particular line of action desirable, and especially under existing circumstances, when the air was highly charged with electricity, and when a large amount of weight was about to be lost owing to the combustion of the fireworks.

We left in grand style. A salvo of garden artillery announced the slip of the cable, and the most beautiful red and green fires changed the hue of the silken globe as it rose over the heads of the people; and just as these grew faint the aërial pyrotechnics burst forth, and the cheers rose lustily as each device engaged attention—for every piece was artistically arranged; and when the Roman candles shot out their many-coloured stars, and petards burst with a crashing sound, and golden and silver showers enlivened the darkness of mid-air, every spectator seemed to be in ecstacy; nor was there a single shout of dissatisfaction or fear, until nature—as if displeased with

man's efforts to light up the elements—broke out in apparent discontent; and a wide-spread flash, with deep-toned thunder overhead, arrested public admiration, and produced a death-like pause, both with us in the car and those on the earth—all of whom had seen us enveloped, apparently, in a flame of fire.

Our own feelings at this critical period can very well be imagined. We were now some 4000 feet high, in a storm of thunder and lightning, our fireworks were hardly spent and the balloon was mounting rapidly and was fully distended, so that close watching, and a proper line of action, could alone secure our safety.

When, after another flash or two, the gas rushed out of the safety valve, I looked at Mr. Gypson, wondering how he intended to act, and it was not long before I came to the conclusion that the upper valve ought to be opened so as to remove a visible strain on the lower hemisphere of the balloon. Had *I* seized the line and opened the valve I should most assuredly not have done wrong, but I simply, by pointing and hinting, endeavoured, with too much deference, to persuade him to do as I thought expedient.

He was not, evidently, quite of the same way of thinking as myself; at last I cried out, "if the valve is not opened the balloon will burst."

Hardly had I uttered the warning when the car appeared to drop suddenly some six or eight feet beneath the balloon.

We all looked up, of course, affrighted, thinking that the netting was giving way at the top, and Mr. Albert Smith was impressed with the idea that I had pulled the

valve line, and broken the framework; but on looking upwards the sparks from the expiring fireworks, aided by a flash of lightning, disclosed the awful fact that the balloon had rent fully sixteen feet, and that we were falling headlong right over the west end of London, with myriads of gas lamps beneath us, and houses in such close proximity, that death stared us all in the face, and seemed inevitable.

Situated as I was, on the hoop, with a better opportunity of observing the torn silk and net work than the rest, I noticed after the first shock to the nerves, that the line which connected the neck of the balloon was unduly tightened, and it immediately occurred to me if I cut that, the lower part of the balloon would the more readily form a resisting surface or parachute.

Much against the wishes of my companions I severed this cord, and a check was soon observable, but the sparks from the paper cases shot up among the gas through the tear in the silk, and once more the thunder roared, and lightning flashed, so that a more frightful descent to the earth could not possibly be imagined.

As the gas-lit metropolis appeared to come up towards us—for, strange as it may seem, there was no sense of giddiness or dropping—we collected the ballast bags and disconnected the grapnel rope in order to let them go just as we came in contact with the ground.

Fortunately, or rather say providentially, the balloon fell in a newly formed street in the Belgrave Road, Pimlico, while the network caught in some scaffold poles, which helped to break the force of collision.

Only one of the four of us was hurt, and that was myself, who received a cut in the hand from a bystander while he was trying to let us out of the network, which fell over our heads when the car touched the road.

Albert Smith and Mr. Pridmore lost no time in going back to Vauxhall Gardens to assure people of our safety; but the general public were not aware of the accident, although some few, who narrowly watched the course of the balloon, noticed that it appeared to be falling quickly and surrounded with sparks.

Almost the first person Albert Smith was said to have encountered on entering Vauxhall, was his brother, who looked amazed at seeing him, but observed a certain pallor and other indications of something being out of order.

"Good gracious, Albert," he said, "I could have declared I saw you go in the balloon."

"So you did," was the reply, "don't be alarmed, an accident happened, but no one is hurt. Come and tell Mr. Wardell particulars."

After Mr. Gypson and I had returned with the luggage on top of a cab, a consultation was held as to the cause of the rupture; one thought the valve was broken, and another that the balloon was struck with the electric fluid, but the proprietor, as well as myself, knew the precise cause of the burst, and when an examination was made on the following morning, the valve line was found not to have been pulled, so the rent could clearly have been prevented had the valve been opened in time.

Divested in this way of a great deal of the horror

associated with the stormy state of the weather, the accident assumed a more simple and comprehensible form.

No wonder, therefore, that after talking these points over, Mr. Gypson and I agreed, that in order to demonstrate that the balloon was not wanting in strength, it would be well to make another ascent by night with fireworks. Mr. Albert Smith was again invited, but a certain pressure, exercised perhaps wisely, by his friends prevented him from ascending again.

Mr. Pridmore, too, although as brave as need be, did not join us; but that very night week, with double the weight of fireworks, we ascended again with the restored balloon, and this time all went well, and we came down at Acton, having with us a third voyager, in the person of a captain, who had accompanied us under circumstances characteristic of an Englishman, and, perhaps, worth narrating.

Some little time before starting the said captain applied for a seat in the car, and I was asked to negotiate for him, in doing which I thought it but right to explain that an accident had happened the week previously and that Mr. Gypson was by no means desirous of taking a third person on the present occasion.

After I had again alluded in unmistakable terms to the perilous descent, the captain, in no way discouraged, said:

"Well sir, you are taking a great deal of trouble to inform me of that which is patent to everybody who reads, but I suppose the odds are that to-night there will be no smash."

"Just so," I added encouragingly, when the gallant gentleman stepped forward and took his place.

After the balloon was packed up at Acton I fancied that our companion looked as if he was happy and self-satisfied, he begged of us to go with him to his club, adding that he could well afford to offer an entertainment as he had made a wager of one hundred pounds that he would ascend that night, a decided opinion having prevailed at his club that he dare not do so, as a terrible catastrophe would be sure to take place, and so thought the public apparently, for Vauxhall was filled to such an extent that the garden officials described the crowd as so thick that one might have walked on people's heads.

During the winter of 1847 Lieutenant Gale found that the expenses of establishing himself in popular favour were heavier than he had anticipated. He was associated with two other gentlemen in the proprietorship of his balloon, but his individual responsibilities caused a split, so that the aëronaut and his partners separated.

When Gale lost or threw up all controlling power over the balloon, the then sole owners having as they said a considerable amount of confidence in my judgment, called upon me, and proposed that as I had ascended so frequently and had encountered so many dangers, that I should make a series of ascents on my own and on their account, and that if I would manage the balloon that was styled Gale's, but which was really theirs, I should have every facility for doing so, as Gale would have nothing more to do with it.

Such a thought never having entered my head, and

being moreover engaged as a dentist, I at once declined, but not without explaining that my relatives had always discountenanced my balloon ascents, and would raise most positively a great outcry if ever my name appeared in a public capacity as a professed aëronaut.

Shortly after this refusal we again met in company with several of the admirers of aërostation, and whether by design or casual conversation I know not, but certain it was that gossip turned upon my former aërial adventures, and upon the advisability of my making it at once a business affair as well as a pastime. All the arguments I raised against the proposal were swept away by overwhelming opinions as to my aptitude and so forth.

"Look," said one, "you are certainly risking your life without any profit, and the chances are you frequently dip your hand pretty deeply into your pocket minus any return."

"Again," said another, "look at the hair-breath escapes you have had, perhaps if you were to run alone these would be diminished."

"And then," suggested a third, "by being your own pilot you might attain to success and honour."

This last inducement proved more weighty and seductive than the two former, and when the question was simply put whether if I would mind a run over to Brussels, just to put them right there for one or two ascents, I consented, but had no idea at the time that I was doing an act which would lead to my becoming a practical balloonist.

In the spring of 1848, therefore, I agreed to manage the said balloon, but before ascending I christened it the

"Sylph," and that word was painted three times in giant characters round the equator, so that wherever it appeared, or whichever way it turned, the name was always prominent.

My first ascent, as director in the Belgian capital, was to take place in the month of May, but a voyage by private arrangement was set on foot by way of a trial trip, and one of the owners, a Mr. S——, was to entrust his life to my care, and we were to go whither the winds blew us, on a sort of pleasure trip. The "Sylph" received a good supply of gas at the Independent Gas-works at Haggerston, London, on April 10th; early in the afternoon we ascended, and after being nearly three hours aloft came down near Colchester, passing directly over the county town of Essex.

This led on our way back to a call at Chelmsford, and as I knew several persons in that town who now learnt that I was commanding officer of tho good craft "Sylph," nothing would satisfy them but getting up an ascent there, and although I was averse to any undertaking of the sort in England, still I was over persuaded, and the rumour rapidly gained circulation that I should make a public ascent from the gas-yard of the town shortly, and that as it would be the first thing of the kind from Chelmsford for seventeen years, the inhabitants would hail such an exhibition with much pleasure and good attendance.

The first of my two ascents from this town took place April 28th, 1848. The weather was not exactly propitious, for the morning rose somewhat sulky.

> "And her sick head was bound about with clouds,
> As if she threatened night e'er noon of day."

In this state of things, a postponement was contemplated, but soon after mid-day, the sun, "of this great world the eye and soul," scattered the clouds and revived the preparations; there was, in fact, a complete revolution in the weather, and the curious began to gather in and take up their positions, while the bright eyes of many Essex ladies were directed, not to the six points of Chartism, just then famous, but to the one point where the silken craft towered above the adjoining buildings, as it was influenced by the breeze in the gas-works.

The visitors having been treated with a series of partial ascents, at six o'clock the balloon rose. In the car were Mr. Chas. Livermore, of Felstead, and Mr. Isaac Livermore, of Dunmow, together with Mr. Church, the engineer of the gas-works.

We were greeted in our course by thousands of applauding voices—

> "Followed far by many a wond'ring eye,
> They glide majestic 'twixt the earth and sky."

The "Sylph" took a direction over the Hanning fields, and ultimately descended near Rettendon Common.

On May the 5th, a second illustration was made from the same locality. This time the atmosphere had all the sunshine and softness of balmy spring, the visitors were far more numerous than on the former occasion, and the reserved seats were filled principally with ladies, many of them from the leading families of the neighbourhood.

Captive ascents were found to be impracticable this day, but at length Mr. Ram, of Newland Hall, with two other

gentlemen entered the car, and we mounted over the irregular forces who garrisoned the house-tops in rapid style, and moved towards the Roothings.

Strange to say, the descent was made near Good Easter, where Mr. Ram lived, and here I kept the balloon all night; the following morning, soon after sunrise, I began taking people up, the length of the cable, and after breakfast Mr. Ram's daughters had a panoramic view of the Hall and Park; the elder young lady would fain have ascended altogether, but papa had made up his mind to do so once more himself, so that soon after 11 o'clock we started again with the same gas, and after being up nearly an hour, descended at Forth-end, near Felstead.

Before starting from the gas-works, on the 5th instant, I made the following estimate of the weight of the "Sylph" and its appendages:—

Balloon, netting, and car	400 lbs.
Mr. Ram	160 ,,
Two other gentlemen	304 ,,
Myself	148 ,,
Grapnel and rope	52 ,,
Coats, instruments, &c.	30 ,,
Ballast	160 ,,
Total	1254 lbs.

being the weight which 32,000 feet of carburetted hydrogen gas would sustain at a specific gravity of about 440.

The temperature of the air on the earth was sixty-two degrees; at the greatest altitude, viz., three-quarters of a

mile, forty-nine degrees. Temperature of gas on the earth, as obtained by placing a thermometer in the neck, sixty-three degrees; ditto in mid-air, forty-four degrees. Force of expansion, as indicated by the pressure gauge, 5·10, or half an inch; rate of travelling, twenty miles an hour; direction of wind, N.W.

About the middle of the merry month of May Mr. S—— and I formed part of a group of passengers at London Bridge Wharf, on our way to the Antwerp steam-boat.

Everybody but ourselves was looking after the porters and their luggage. We appeared to be gazing at the clouds, but were in reality watching a large wicker basket which was suspended some thirty feet under a crane, and was ready to be swung in on deck directly the mate saw all clear below, and sung out "lower away."

This basket, owing to its unusual size, attracted general attention, a bystander, who took it for a large bread basket, observed that the passengers would be well off for the "staff of life," even if they lacked delicacies. But the interest taken in the huge basket rather increased than diminished when the mate, a little angry with the seamen, cried out "bear a hand there, stow away that balloon."

"Belongs to you Sir?" added the officer, directing a patronizing glance towards me, whereupon a hundred eyes or more followed suit, and my connection with the supposed bread basket was established beyond the shadow of a doubt. Assuming, rather than feeling, the required amount of nerve to endure this introduction to the ship's crew, I nodded an affirmative, and tried to suppress a rush of blood to the cheek, but it would not do. I looked ashamed

of this branch of publicity, and proposed to go below and see after our berths.

The first person I met in the chief cabin was an acquaintance, but glad enough was I to find that he had not noticed our luggage, and what was more, that he was merely seeing a friend off to the continent. No sooner had we deposited our portmanteaus in the sleeping berths than I proposed to go on deck again, whispering to my friend as we went up the companion ladder, "out of the frying-pan into the fire." "That gentleman," I added, "knows my family well, and I would rather not be identified with the big basket so uncommonly close to London Bridge."

"That's all a matter of taste," observed Mr. S—— consolingly, "many men would be proud of the position."

"But you know I am not, and you are aware of my reasons for not caring about being thought a professional aëronaut."

"All right Mr. Coxwell, take it quietly and pass for an amateur."

The vessel had not rounded the Isle of Dogs when we found ourselves in earnest conversation with an elderly gentleman, who was much interested in aërostation. It came out, too, that he had ascended himself, and that he was intimate with some of the aëronautic celebrities of the present century.

"Do you know," said our communicative fellow-traveller, "I never could thoroughly understand the cause of the fatal descent of that poor man Cocking; being abroad at

the time I had not the opportunity of keeping pace with our home newspapers."

In reply I said, "You are aware that the principle of his parachute was diametrically opposite to Garnerin's, which had descended successfully. Cocking's was a sort of inverted cone, while that previously employed was more like an umbrella turned upside down with a weight appended to the stick."

"Exactly," said our intelligent acquaintance, "and the tendency of a rush of air was not to collapse but rather to keep it distended."

I fully agreed, and added that "Two objectionable circumstances attended the use of Garnerin's parachute, namely, the length of time which elapsed before it expanded, and the violent oscillating movement which accompanied the descent. In order to obviate these deficiencies a variety of plans had been proposed at different times, amongst which was that of Cocking's." The inverted cone principle, however, was not an idea originating with Cocking, although he had lectured on the subject in 1814 before the Society of Arts.

"Towards the end of the last century this kind of parachute was proposed in Paris, and revived by Sir George Cayley, and again more fully developed by Mr. Kerr in the Enclyclopædia Edinensis."

"Pray," inquired our friend, "do you happen to know the weight and diameter of Cocking's parachute?"

"Yes; the computations which appeared in the public press, previous to the inquest, were loose and incorrect. They were to the effect that the entire weight was 393 lbs.,

whereas, from the evidence taken before the coroner, it appeared that the apparatus weighed 413 lbs., and Mr. Cocking 170 lbs. The terminal velocity, therefore, would have been nearly twenty feet in a second had the parachute not collapsed. Its diameter was thirty-four feet."

"Of course one of smaller dimensions on the concave plan would descend less rapidly?"

"Oh, certainly a parachute on the Garnerin principle would bring a man down at the rate of twenty feet in a second, even if it were fifteen feet in diameter."

"According to the most reliable tables of atmospheric resistances, a weight of one pound under a square foot of sustaining surface would cause it to descend at the rate of 1320 feet per second, or fifteen miles an hour."

"But as this is a far greater rate than is consistent with safety, the diameter should be at least twenty-five feet."

"Then how is it that scientific men and practical aëronauts did not point out these faults?"

"They did; but poor Cocking was so confident and determined, that no sooner was a large balloon built by the Vauxhall proprietors, Messrs. Gye and Hughes, than he proposed appending a parachute to it, and he threatened in the event of refusal, to construct another balloon and offer opposition to Vauxhall."

"Indeed, and I have no doubt that pecuniary inducements had their weight. But what did Mr. Green say?"

"Green, to do him justice, never liked the experiment, and he has been heard to say since, that for no amount of money would he repeat his experience on July 24th, 1837."

"He is said at first to have declined to connect his name with it, but he was bound to ascend with the great balloon when called upon by the proprietors, as there was a legal difficulty in evading the ascent."

"It has been suggested, and with some show of practicability, that he might by stratagem have brought Cocking down without allowing him to descend with his parachute alone, but Mr. Green distinctly stated on the other hand, that his individual impression was, that having withstood the pressure of the atmosphere in the ascent, the parachute would go down safely."

"What with the danger to Mr. Green and his companion, Mr. E. Spencer, owing to the loss of so great a weight, it is evident that it was an ill-judged affair from first to last."

"Most decidedly. Now please to tell me where this frail structure gave way."

"The upper circle was made only of tin hooping, soldered together, and this broke before even the ascent was made."

"It transpired, afterwards, that Cocking in all probability twisted the cord round his wrist, the better to enable him to effect his liberation by pulling hard at the trigger; in so doing it is conjectured that he was jerked against the smaller circle at the apex of the cone, and that his own body produced a fracture in the framework, which added to its weakness."

"This concussion may have deprived him of sensibility as well, a wound found on his temple tends to confirm this view of the catastrophe."

Thus ended our dissertation on parachutes; but long ere our further chat had ceased, we had approached the mouth of Father Thames, where a fresh breeze and a lively motion caused many passengers to go below, and others to obey the steward's call to dinner. *We* responded, and went through not only the ceremony, but the enjoyment of, a generous repast, without feeling indisposed. On landing at Antwerp an Englishman presented himself on the quay, whom we took, and rightly so, for a gentleman who had entered into the balloon speculation at Brussels, and who had in consequence engaged my services to ascend.

He was a red-haired, gaunt person, extremely short-sighted, and wore a cap and close-fitting dress-coat, which had seen more sunny days and was conspicuously short in the sleeves. But, notwithstanding his optical infirmity, he was a match for the sharpest porter, and by tact he was soon up with the steward and ascertained our names and errand with astonishing sharpness.

In introducing himself, he brought his hand down upon the great basket, or balloon car, with some degree of familiarity, saying, "Well, here you are," as if he had been intimately acquainted with us previously.

It was, however our first meeting, and was essentially of a business character, but anything like a stiff commercial view of this preliminary interview was soon removed by a jaunty nonchalance on his part. He then drew out a showy cigar case, and almost immediately replaced it, saying, "Wait a bit, we will go over to the hotel and breakfast first," which we decided to do, after his perceiving that the cigar case was empty.

All doubt being then removed, Mr. S—— and I looked at each other, as much as to say, perhaps he is a capital fellow, notwithstanding his manner, looks, and shortcomings.

After refreshment, our long-haired short-sighted, short-sleeved countryman proposed, or rather peremptorily decided upon pushing on to Brussels forthwith.

Matters were not quite so forward as he could wish, and although the ascent was positively announced, and the king had promised his patronage, still there was much to be done, and for his part he had quite lost faith in Frenchmen and Belgians. What all this meant, we could only surmise and think over privately.

On arriving at Brussels we found that the intended balloon ascent had received such careless attention, that the prospect of its taking place on the day announced was doubtful in the extreme.

It seemed that a company had been formed to carry out this little enterprise, and that one Frenchman, two Belgians, a Dutchman, and an Englishman, had united their abilities and purses to put it into execution.

The Englishman was clearly neither the treasurer nor principal. The Frenchman had chiefly to do with the Prado Gardens, whence the "Sylph" was to rise; and whether the Dutchman or the Belgians were the sleeping partners, or the capitalists, they deposed not, nor could we gather, although it soon became evident that the relative positions of each member of so complicated an association, required to be well and at once understood by me, before proceeding further in the matter.

I said, therefore, to the British representative of this amalgamated balloon company, that I was under the impression I was purely and solely engaged by the lessee of the Prado to make these ascents, and that he was a well-to-do and competent proprietor.

"So I thought," observed the seedy Englishman.

"It appears to me that there are a prodigious number of cooks to prepare this simple mess of broth, and I tell you candidly," I continued, "that unless the cash for the first ascent, and the requisite supply of gas are forthcoming within twenty-four hours I shall retire from Brussels but not without publicly alleging as a reason, that I have been deceived by the party inviting us to come over."

On due inquiry, I ascertained that no pipes had been brought into the gardens of adequate size for the inflation, and that it was intended, without my approval or consent, to accomplish that all important task at a distant gas-works, outside the capital, and then before daybreak, to pass it over the housetops, and finally deposit it in the Prado, until such time as the public had assembled.

Now, although this process is one which I have frequently accomplished under favourable circumstances as to wind and locality, still to drag a balloon through Brussels, and risk its contact with high houses and chimneys, was an injudicious beginning, and I protested emphatically, and indeed declined it altogether.

I had, however, stood out, according to the letter of my own request, for cash and a supply of gas, and these terms, after no small altercation, were agreed to.

The cash was to be paid just when my part of the contract was about to be fulfilled; but the gas could not be delivered in the gardens, as the cost would be enormous, no such large pipes as those required being in the neighbourhood.

When the Englishman, with short sleeves and sight, first wrote to us in London, I was assured that "all the customary facilities for filling balloons would be found in the Vauxhall of Brussels," and "that no doubt or hesitation need be felt on that score."

But surely such discordant bickerings and confusion of languages, as we had, never before preceded the arrangements for this kind of work.

There was no money, no head, no gas, and no order in any step that had been taken, until I personally superintended the whole affair.

A certain amount of pressure and decision, however, brought this heterogeneous mixture of nationalities entirely to book, but they *had me* on one point, and at a tremendous advantage, namely, I was driven to fill the "Sylph" at the gas works, and endeavour to transport it through the town.

This attempt was made in May, 1848, and on that occasion grey-eyed morn broke in with a high dawn and a reddish sky, an appearance which was interpreted as being very fine by those who assembled for an exciting view before breakfast.

We soon beat to quarters, as nautical men say, and, although we had "time by the forelock," we were none too soon, as I was most anxious to be moving before the morning

breezes were astir; and, though I had little time for noticing the barometer, still I had observed a decided drop, and did not altogether admire present appearances.

No sooner was the gas turned on than the "Sylph" began to display its proportions satisfactorily, and the lookers on threw themselves into various postures indicative of approbation.

"*Ah! Monsieur Coxvel,*" said one of the party, stroking down his beard," "*you vil hav vun vary fine day; no vind, no nothink. Your transport vil no be difficile.*"

Hereupon I glanced around the horizon, but returned the weather wise Belgian no reply. He then looked with such a scrutinizing glance, as to provoke an expression of discontent.

"*Ah! vat you mean,*" inquired he, "*vy you frown?*"

The fact was, a small solitary, dark-looking cloud had made its appearance to the westward; and, although a goodly distance off, was wending its way up with great rapidity. The configuration of this little intruder on the blue sky was such as to forbode wind.

"Gentlemen," said I to those who were helping, "there is a fresh wind springing up, at no great distance from the earth, and if it does not extend downwards before reaching the gardens, we may consider ourselves fortunate."

Several bystanders protested against the probability of this, and discussed the matter with flourishing action of the hands and much useless talk.

The Frenchman and the English agent grew quite warm as they expressed opposite views about the matter; but the Dutchman, who was one of the party, avowed his firm

belief that squally weather was approaching, and the way in which he gave a furtive and semi-nautical glance above, showed at once that he shared my opinions and fears.

Our attention was directed as quickly as possible to securing the net lines to the hoop, so as to get a fair and equal bearing from a strong centre, and we had just completed this necessary precaution, when the long grass around us bent to leeward with a low, murmuring sound, and in less than half-an-hour after the first symptoms of an approaching gale, one fitful gust broke upon us, creating, as it acted upon the partially-filled balloon, a flapping, blustering sort of music, which only loud Boreas is accustomed to indulge in.

Around the hoop and in the car were placed about forty half-hundred weights, in order to steady the restless machine, which on being filled and let up to the extent of the netting rolled round in graceful sweeps over our heads.

The manager of the gardens, a sturdy Frenchman, was for a precipitate dash through the city, regardless of all risk, but the adventurous Englishman asked "How would Monsieur act if the balloon were his own property?"

"*Vat you vil do?*" said the military looking Belgian, who promised us "*no vind, no nothink.*"

"Why Sir," I replied, "the fact is we have to contend with a most formidable opponent, and I think we can't do better than act purely on the defensive, the assaults of this strong wind are quite as much as the balloon can bear, and if we attempt to charge in the teeth of the wind we shall only be repulsed, perhaps with heavy loss."

As there appeared to be some doubt about the correctness

of my views, which required translation, I ordered a general move forward, by way of demonstrating whether it were possible to keep on or whether it was better to lay-to until the wind dropped.

Our forces, so to speak, were thus divided:—twenty burly mechanics at the car, six to each guy-rope, about thirty to two ropes fastened to the hoop with a view of pulling the balloon along, myself in the car giving directions, the Englishman, whose sleeves were shorter than ever, at my right acting as interpreter, Mr. S—— on my left pulling for example's sake; the manager of the Prado public garden, with subordinates, and small fry, were at their posts shouting vociferously, and thereby confounding the interpreter.

Away we marched, to the infinite delight of the Frenchmen, for a few steps right bravely, but suddenly, flap, round, up, down, went the "Sylph," upsetting several of the party, and at last we were driven further back than we had actually advanced, which proved sufficient to convince everybody present as to who was right and who were wrong.

We now essayed to move laterally towards a somewhat sheltered spot, but here a fresh difficulty soon presented itself in the shape of a file of soldiers, who drew up near the balloon. An officer then advanced and summoned me to his presence.

There was something decidedly ominous in the undertoned conversation betwixt the officer and myself. I could perceive that all persons present preserved silence, and displayed a large amount of curiosity to ascertain what was going to happen.

The effect of the wind, which was gradually increasing, was not so apparent when the "Sylph" was sheltered behind some trees as it was previously, when each blast came upon us in its full fury, without break or hindrance. I therefore betook myself to the car and stowed away the sand-bags, getting rid of some half-hundred weights in their stead. Lastly I attached my liberating iron to the hoop, and passed into the hands of the workmen a rope connected therewith, which they were requested to hold, and I then informed the assistants that I wished to learn what ascending power the gas had, to effect which it would be necessary to allow the car to rise once or twice a few feet above the ground.

I noticed that the Belgians, Dutchman, and Frenchman, who were most interested in these proceedings, stood aloof in earnest conversation. Quite unexpectedly I found a pair of long hands and bare wrists over the side of the car, and before I could make the first trial with the balloon the Englishman, although short-sighted be it remembered, had vaulted in by my side, without explaining himself or asking of me an explanation, but I guessed when I put out a few bags of sand to equalize his weight that he knew as much of my real intentions as I did myself.

The moment I found the balloon had a buoyant tendency, I suddenly and unexpectedly pulled the trigger, when away went the "Sylph" with a bound, allowing the holders of the rope to go head-over-heels, and everybody else to be seized with the conviction that the balloon had broken away from its moorings.

My intrepid companion was not long in convincing me

that he overheard the officer's secret request, which was, that "owing to the then unsettled state of political affairs persons were not allowed to collect in numbers in the public thoroughfare, and that if I found it impossible to reach the Prado, the authorities requested that I would let out the gas and stop the proceedings."

"In what way did you pledge yourself to the official?" asked my countryman, as he looked down upon the receding knot of astonished spectators beneath.

"Just allow me to let off a little gas, and I will tell you; we are rising fast notwithstanding our rapid movement forward. Replying to your question then, I merely promised the officer that the balloon should be removed with all possible expedition. It is not likely that I was going to haul down my colours, or in other words, to let out the gas without ascending."

"But my partners in this speculation, the Frenchman and the others, will hardly comprehend this hasty exit."

"Indeed they will," I replied, "the officer will surely intimate his instructions, and my own way of executing his orders will not be displeasing in the long run."

"What a magnificent view of fair Brussels, but how insignificant in size. Look at the Tower of Malines."

"And far beyond," I added, "you can see Antwerp."

"I knew by your preparations you were going to ascend."

"Did you," I observed, "well, I told no one of my intentions, not even Mr. S——, I thought it would be better to clear off first and explain afterwards. It would have been useless to keep the balloon where it was, and I

have no doubt the friends with whom you are connected will appreciate my motives by and bye."

"We are now passing over a village," said my companion, "which I have just recognised, and you will be astonished to hear that we are least sixteen miles from Brussels, and that we have not been up more than a quarter of an hour."

"I am not surprised at our rate of travelling, but rather at your good sight in picking out a place well known to you."

"Ah," said the Englishman, "mine is a long sight, you will hardly believe that I command the entire panoramic view as clearly as you do; for instance, do you see anything besides those microscopic dots in that green patch? I mean anything besides the cows which graze in the meadows to the right of the farm house."

I looked attentively, and just detected a number of ducks, chiefly white ones, on the banks of a pond, but should not have noticed them unless I had examined minutely.

"How far do you suppose those insignificant specks are down?"

"I should guess 3000 feet, but not having my instruments I cannot accurately ascertain our height or the temperature of the air; indeed, we have little time even for landscape viewing, as I suppose we both wish to make Brussels again to-night, there to account for our unceremonious flight."

I now let off some gas, and in a few minutes we found ourselves travelling with considerable velocity across a

large common, where there were canals and banks in which the grapnel was likely to get hold.

I prepared my companion for a rough landing, telling him he must not mind it, as it was his own seeking.

To do him justice he seemed to like the aerial mode of transit, and when the iron took in a water-course and hung fast in the bank, causing the balloon and car to roll over, and then to break away again, he became conscious of the terrible force of the wind, and prepared for a succession of bumps and shocks.

We were soon trailing along towards another canal, the car keeping just clear of the ground, when I found that it was a good spot to catch in, and begged my fellow traveller to keep fast and look out for squalls. Fortunately this we held fast, but the wayward "Sylph" struggled hard for freedom, and we were thrice driven down with unpleasant violence before I crippled the balloon so as to be able to get out.

We lost no time in returning from whence we came.

On the whole, people were well pleased, both those who were present at the start and those who had only heard of the peculiar circumstances under which it became expedient to make the ascent thus early in the morning.

The newspaper accounts of this first attempt of mine in Belgium eulogised it as "daring and extraordinary." Public attention therefore was not only called to it, but to another, which was spoken of as certain to take place, provided the gas directors would bestir themselves for the public good.

Thus politely challenged, how could they reasonably refrain from obliging?

To do them justice, they came forward readily, and in less than a week a six-inch main was introduced into the Prado Gardens.

On the 2nd of June a large attendance of the inhabitants of Brussels testified the pleasure they derived from a close inspection of the balloon. They were invited to see something like novelty in connection with the ascent, as I had undertaken to show, on a miniature scale, how practicable it was to discharge aërial shells from a balloon, supposing they were needed in warfare, when it was not possible to bombard in the usual way, owing to the intervention of hills, water, or other impediments.

As there was hardly a breath of air stirring during inflation, the "Sylph" stood proudly erect, and seemed to bask in the sunshine, occasionally evincing a tendency to rise into the upper air, as if to escape the heat below, by soaring into the refreshing coolness of the skies.

A Belgian pyrotechnist having made the explosive shells, in strict accordance with my instructions, and in exact imitation of a model to scale, I was rather anxious to have them all brought out and adjusted before the last moment of setting off.

Great interest was manifested and some apprehension felt about these fireworks, which I had promised to ignite when 2,000 feet high.

The danger connected with their use rested in a great measure with the manufacturer.

If my instructions were rigidly adhered to, they would go off as certainly as a well-made military shell from a mortar. I had taken the precaution of attaching them to

a separate battery, which was ready to lower when the balloon left the earth, and I could then pass down a rope ladder, something after the plan of Lieut. Gale, and by communicating with a fuse at a safe distance from the gas, the shells would be ignited.

Being perfectly satisfied with the entire disposition of this part of the contrivance, I invited my intended fellow travellers to enter the car. These were Mr. N——, a railway engineer, and Mr. S——. At eight o'clock p.m., barometer 30·2 and thermometer 66°, we set out for a calm, delightful journey.

The "Sylph" rose almost perpendicularly, so that there was no necessity for hurry in lowering the battery, or in going down to fire the shells.

In less than two minutes, a bluish outburst of smoke, followed by a sharp sound, announced that the first aërial shell had burst in mid-air; a second ring of smoke formed higher up near the balloon, and then a third and fourth exploded at about the original range, the rest following at stated intervals, and with remarkable precision.

Cheer succeeded cheer as each "bang" reached the earth.

"Look out for the next," cried Mr. N—— as the twelfth shell darted down towards the housetops, and then detonated with a loud ringing report, which echoed in the still air like distant artillery. "That, indeed, is a splendid sight."

"And sound too," added Mr. S——. "How many more are there to go off now?"

"As many more," I replied, "but there is no danger,

they are all trimmed to a nicety, and made to fall at least 300 feet before exploding."

"If these things were used on a large scale, how would you manage their ignition?" enquired the engineer.

"That might be by concussion, supposing the shells were formed like a pear, with two or three nipples at the heavier end, and by fuse as well in case of failure when striking, but we will speak of these matters by and bye; please to note down, barometer 25·4 and thermometer 47° Fahrenheit; we have been so busy as not to have observed the pressure and temperature, which were considerable."

"It does not feel so much colder," observed Mr. N——.

"No," I answered, "for my part, it appears to me warmer, owing to my going up and down the ladder and otherwise exerting myself; but pray notice our course: you, as a resident, know all about that."

"I am much mistaken," said the engineer, "if we are not going direct for Waterloo. We are too, by Jove!"

"Bravo," I exclaimed; "how stands the barometer?"

"About 5·800 feet, we will lower gradually, as we clear the forest of Soignes so as to have a good bird's-eye view of the battle-fields."

Mr. S——, who had been looking through a telescope, and who had only recently accompanied us to Waterloo, now caught sight of the lion on the mound.

"Sure enough," he said," we shall pass directly over."

A balloon view of Waterloo with the surrounding country, and bold acclivities, fails entirely to convey the martial associations, which those noted Belgic plains would be

expected to arouse. We felt hardly reconciled to the fact, that, on that cluster of fields, which looked so rural, and cultivated, the fate of Europe had been decided, in so great and sanguinary a contest.

As our survey happened to be made in the same month as that on which the memorable battle was fought; the general appearances of nature could not have been very dissimilar to what they were on June 17th, 1815, just when the British infantry bivouacked on the rising ground near the village, and the cavalry rested in those hollows in the rear.

It is true we gazed upon a landscape which was comparatively tame, when unenlivened by the armies of Wellington, Blücher, and Napoleon.

An aërial glance at that great historical picture would indeed have been a sight worth seeing. But the mere bird's-eye view of the site was somewhat disappointing.

Could we have seen the downtrodden corn and rye, the clouds of smoke, the prancing horses, and helmeted riders, the splendid French columns impetuously advancing against the solid squares of red. Could we have heard the din and roar of musketry and cannon, and the wild hurrah of the last grand charge, then indeed the scene would have appeared fresh and imposing. Our bird's-eye view of Waterloo, so far from being lively and soul-stirring, was rather of a philosophical and contemplative character.

One could not pass over the ruins of Hougomont, or the farm-house of La Haye Saint, without thinking of the dust and ashes of countrymen and foes which were there

scattered in profusion; when we recollect that on the small surface of two square miles, 50,000 men and horses were ascertained to be lying, we can form some idea of the mouldering remains which lie beneath the ripening crops, which presented themselves to our view.

The sun had just set on the peaceful plains in rosy and majestic grandeur. The glorious King of Day declined also on June 18th, thirty-three years before we passed over in a balloon. But how different the scene!

On that evening after the battle, when the cries of the wounded filled the air, as the roar of artillery ceased, and, as night approached, the earth was red dyed and sodden; but on this—inviting cheers of welcome came to us on all sides, and at Waterloo we met with a most friendly reception.

I made one more ascent in the year 1848, in Belgium; this time from the Bourse, at Antwerp. The voyage which was made under great disadvantages presented a rare and remarkable feature. The Englishman, with whom the reader has been made acquainted, was again commissioned to negociate with the gas directors of Antwerp, respecting an ample supply for the inflation; but it again happened that the delivery was by no means equal to our expectations. In fact, when the hour for departure arrived, the "Sylph" was not half-full.

What was to be done? The visitors would be disappointed, and my own name connected with a failure.

"Well, that won't do," I remember saying, "if there is any means of rising above the Exchange, and clearing Antwerp, I must resort to it."

"Give me a supply of cordage, and let me tie a few lines across the hoop, and see if there is gas enough to take me up without a car. Do not say a word to anyone, lest our plans are thwarted."

Having placed myself in the hoop, without any other protection whatever, I found that the balloon would just raise me. The spectators were not aware that I was about to leave them, minus a car to sit in, so that, on mounting over their heads, great surprise was at first manifested, but followed quickly by expressions of approbation, when my risky position was known to be owing to a determination to fulfil my contract. I attained a great elevation during this trip, but, being without a barometer, I could only estimate it approximately at two and a-half miles, and this was done by observing that the balloon rose until it became fully distended, and as it was not half inflated at starting, I knew I was quite, if not over two and a half miles high, because a volume of gas will double its bulk at an elevation of nearly three miles and three-quarters.

The excessive cold I experienced was no doubt to be attributed to the current of air passing through the ring, without being in any way broken either by a wicker ear or extra clothing.

Not having any ballast to put out or to work with, I was anxious to allow the balloon to rise and fall by alternate expansion and condensation, without letting out gas through the upper valve.

My descent was safely made near Turnhout

A messenger from Brussels, direct from Callow's Hotel, arrived on the morning after the ascent, requesting an

immediate interview on the part of a gentleman from Prussia, who was anxious to take me over the Rhine.

At the appointed hour, two cards were sent up, and a local solicitor presented himself, and introduced me to Herr Abraham Küpper, the proprietor of Johannisberg, a celebrated *locale*, as it was styled, at Elberfeld.

Herr Küpper, a fine stout fellow with an immense beard, which spread over a spotless white waistcoat, was one of those men who make a pleasing first impression.

I conceived a decided prejudice in his favour before we had entered much into matters of business, and as he was willing to agree to my own terms for a certain number of ascents, the services of the solicitor were soon brought into requisition, and an agreement entered into which was mutually satisfactory. Herr Küpper then requested the favour of our company during the afternoon, and as a carriage was at the door, he proposed a drive in the Park.

Mr. S——, together with our friend, the roving Englishman, whose personal appearance had improved, was pleased to find that our prospects were brightening, and I ought to state that the latter was not personally responsible, or at any rate to be blamed, for the difficulties we had to contend with in Brussels; all that should be placed to the account of his associates in the badly-managed speculation. It was the Dutchman, the Belgian, and the Frenchman who were not up to their work, he now pointed out, and happy was he to find that this fine bold Prussian, with whom we were treating, was evidently a man of business, and he further added, but not until we had partaken of champagne as well as good claret, that he, Herr Küpper, clearly

knew what he was about; but whether the Englishman was alluding to the treat instead of the treaty he did not say; but this much he let out, that he was so much taken with our new acquaintance that he should be happy, at our expense, to go with us to Elberfeld, but as Küpper could neither speak French nor English, and as the rest of our party could not say much in German, Mr. S—— pertinently asked whether he wished to be engaged as interpreter or companion.

He was silenced at this enquiry, since none of us while drinking success to the undertaking could understand or properly reply to the caterer from Rhineland.

However, we started with him after a day or two spent in sight-seeing, but we left the Brussels agent at his lodgings, committing ourselves to the care of Herr Küpper, whose agreeable postures and friendly attentions, combined with the most amusing efforts to do a little broken English, made some amends for want of fluency on both sides, but no sooner had we arrived at the Johannisberg Gardens at Elberfeld, than the redoubtable proprietor called aloud, over the heads of a large assemblage of visitors, for Mr. B——, when a gentleman, wearing a white hat and green coat, came forward and hailed us as countrymen, saying how glad he was to see us, and confirming his honest outburst with such a hearty shaking of hands that a cry of "bravo!" burst from many of those present.

Herr Küpper having thus introduced us, vociferated for champagne, cigars, &c., though he need not have cried so loud, as there were two or three *kelners* close behind him; it had, however, to our way of thinking a grand and

welcome ring about it, and so thought Mr. B——, who was none of your mock modest men, when good wine stared him in the face.

"Go it Dick," cried another Englishman, who was seated near our table, and what with the accent of this familiar advice, backed with other pleasantries, we soon felt at ease, if not at home.

Herr Küpper, some time after our refreshment with Mr. Dick B——, invited us to see the ball-room and the grounds; we dined together somewhat later, and after an excellent repast were present at the concert.

Dick B—— was getting rather effusive in his explanations as to the musicians, and becoming very red in the face, but he impressed us as being a capital fellow under the circumstances in which we were placed, and he was considered as such by many of his pupils who were present, and who rejoiced to see him happy.

"You are not perhaps aware," said Mr. B——, "that I am a teacher of languages."

Nor were we—as I, for one, had put him down as an equestrian or circus master; however, we had fortunately not allowed the secret cogitations to escape our lips, so no harm was done. Mr. B——, on our separating that evening, promised to be "at our service" early next morning, and sure enough Dick came to an early breakfast, and had not, as we inferred, had very much sleep.

"The early bird gets the worm," said Mr. B——, as he helped himself to some wurst, or smoked sausage, by way of a patronising start.

"Make yourselves at home, gentlemen. Do you

like raw ham and black bread?" "*I do,*" he added; "have found out a thing or two since I left the great city," meaning London.

Mr. S—— who had delicate digestive organs, and who had not travelled much, failed in doing that justice to his first German breakfast, which Mr. B—— tackled with such gusto. He, however, partook of his coffee with a quiet nod of approval, and was in the act of finishing his first cup when the teacher of languages, looking S—— straight in the face, said, "I suppose you had a smother of frogs at Callow's Hotel in Brussels;" but, perceiving that Mr. S—— turned pale, he exclaimed, "My good fellow, what's the matter?"

Poor S—— then ejected, almost in Mr. B——'s face, the black contents of his white cup; he sprang up in a nervous, bewildered state, when I had to do the amiable by way of apology.

Mr. Dick laughed, but stuck to his guns, and recommended eggs, when Mr. Abraham Küpper's voice was heard approaching, who entered smiling, and was followed by a waiter with beefsteaks well broiled, but small; there were three of them, by the way.

Mr. B—— rose to salute either the steaks or mine host, and rubbed his hands with great glee.

"Eh, vat Mein Herren?" asked Herr Küpper, looking to B—— for a response, as to Mr. S——'s sad appearance.

Dick, in German, assured the landlord that he had saved the life of Mr. S—— who would positively starve unless he had something of that kind to begin the day with.

"Donner wetter; what will he end with then?" asked Küpper astonished; of course he knew S—— did not understand the remark, which was made in German.

Dick B—— next declared in point blank Saxon, that for his part "he had got his second wind," and the steaks having restored Mr. S—— by their timely arrival, we managed to pull through; the teacher having taught us already more than one important lesson, and, what is more, illustrated them with his own knife and fork, again fell to with an appetite which was tremendous, considering that he was generous with his coffee and had confessed to a couple of seidels of Beirisch before he put in an appearance.

This, our first substantial breakfast went off very well considering B——'s sallies and noble example.

"Now to business," he said, after receiving our thanks for his service at table.

Outside in the gardens, we could perceive one or two gas-men with their chief engineer, and Abraham himself in his smoking cap, and a long tight-fitting dressing gown, which reached to his slippers; in this attire we noticed how sturdy he was, and withal how commanding.

"He turns sixteen and a half centners," said B——, and their weights are heavier than ours—"but come gentlemen, I perceive Küpper is getting impatient."

We thought that B—— toned down a good deal as we drew near to the monarch of Johannisberg, who puffed his cigar, and then brushed off, or rather hit aside a bit of steak adhering to B——'s coat.

What a change in manner and deportment, I thought.

The fact was we had kept them all waiting to get instructions as to the laying of the gas pipes, while the teacher kept us pottering about inside, merely to gratify his own inordinate propensity for creature comforts.

"Meester Coxvel," cried Küpper—one might have heard his voice half round Elberfeld.

B—— translated with a tremulous accent, as if he were funky; the plain English of it was this—Would I point out, or stamp my foot, to use Küpper's definition, on the exact spot where the pipes were to terminate in the inner circle, just where the balloon was to be filled.

Perceiving, with half an eye, what kind of man we had to do with, I ran to the spot, stamped my foot firmly down, and cried out "here."

"Sehr gut, now Herr Coxvel, (Mr. B—— translate) where will you place the balloon?"

The reply, sharp and emphatic on my part, was again "*here*," but I had moved in the mean time a few yards farther on, and the smartness with which Küpper's questions were answered, elicited his approval, as he raised his smoking cap, advanced towards me with a kindly greeting, and drew forth his cigar case.

"*You* have made a hit of it, if I have not," cried B—— who was now regaining self-possession.

All the preparations having been made to the satisfaction of Küpper, who was a bit of a Tartar in his own domain, I was invited to accompany him down town at midday, Mr. S—— being left to the care of B—— who had begged a holiday from his pupils—they knowing, presumably, that he would scarcely be equal to his

duties, until he had indulged in his first diversion of ballooning.

Abraham Küpper was great in riding, and he was also great in walking, he stood over six feet without his glazed boots, and when, after alighting from an open trap, he placed his arm in mine, and again withdrew it to stroke down his fine flowing beard, he attracted the attention of those who were passing by, and further rivetted it, by pronouncing my name in no undertone, so that I heard several persons observe, "Abraham und der Luftschiffer."

He then led me with stately deportment into a confectioner's, where in a private room we met several professors, doctors, and merchants, most of them I was relieved to find, speaking English; but Küpper on the way had been polite enough to drill into me a rapid instalment of his own language, although it was not high German, I was told—still to me it had a most imposing utterance, accompanied as it was, with considerable action.

One of the party to whom I was introduced, asked the pleasure of my company next day at their scientifiic institution, as there were papers to be read and discussion to follow on an interesting subject.

Küpper agreed that I was to be there without asking if I was that way disposed.

He next hurried me on, goodness knows to how many different places, and I could not but feel that his attentions were of a superior order to what I had met with in Brussels.

At the Institution on the following day, I was at first

disappointed, as the proceedings appeared to me of an informal, and easy going kind.

The room where we met was redolent with the perfumes of tobacco, and coffee was being served, but I soon found out that the proceedings were of a philosophical character, being assisted with explanations in English from Herr Buchmann, who spoke our language well.

After the lecture I tried to get away, feeling much ashamed of my inability to converse in German, but I was retained by Herr Buchmann, who drew me out on my own speciality, and I was glad to find by questions put from different parts of the room that most of those present could express themselves intelligibly in my native tongue.

"Had I any views of my own in writing?" Yes, I had by me a pamphlet, which was read, and which referred to military ballooning. My opinions so far commended themselves to those present that I was invited to become an honorary member, and of course signed my name.

By the time announcements had gone forth as to the first ascent, I had made so many acquaintances, that I positively required a new hat after so often raising my old one, according to the approved local fashion which they managed with so much ease and frequency, that I wondered how they could do so with such little wear and tear to the rim.

Mr. B—— informed me that he never could attain to that mode of salutation, he prided himself on being a Briton to the back bone, and satisfied himself, if not the ladies by a semicircular move of the right hand from his

chest outwards. B—— was a favourite, I found, notwithstanding his brusque address. I began to feel afraid that he would neglect his own interests by devotion to our cause,

One day I overheard a protest from one of his best patrons, which terminated with "that confounded balloon," but Dick always turned up when he was wanted, and now and again when he had better have been engaged elsewhere; he was a typical cockney of the unaffected, commercial class, never having taught his own language until he took up his abode in Elberfeld.

Very early on the morning of the ascent, I mean by 5 a.m., the voice of Herr Küpper might be heard over the housetops, and along the valley of the River Wupper. Mr. B—— was in attendance, and trying to soothe the lessee's occasional irritability, but he had been upset by one Peter, a *Kellerman* who was thought to have imbibed his master's beer, brewed on the premises. Out of twenty workmen who had been told off for our assistance, this Peter had been placed by me to hold the neck part of the balloon, where the gas passes in through a hose.

After doing his best for some time, poor Peter's eyes began to roll rather wildly, when Küpper, with more haste than discretion, sent him to the right about, which caused Peter to stumble against the balloon; Küpper, terribly indignant at this, gave him such a lift under the "stern sheets," as the sailors say, that Peter impelled by the motive power of the governor's left leg, flew, as it were, out of the enclosure; the incident caused some merriment, and at the same time it induced me to examine the

connecting links of the hose pipe. They were all right, but below the hoop of the safety valve, Peter, in his eagerness to hold fast, had sent his nails through the silk, and had made a hole, so that the poor fellow was taking in the fumes of gas, which accounted for his stupefaction.

This explained—it is due to Küpper to say that Peter was recalled, cheered up, and told to have his coffee and something with it, on a table in the garden.

I soon repaired the fracture, when Peter volunteered to try again. I was not displeased with the proposal, and took pains to explain the best method of manipulating such delicate material.

Peter's efforts were now a masterpiece of caution blended with dexterity, and his reappearance produced a feeling of admiration and sympathy among all who were assisting at the inflation.

The flow of gas was much stronger than I had expected, owing to our elevated position. An indication of perfect satisfaction on my part, caused Herr Küpper to light his morning cigar, an act which drew forth a flash of disapproval in my eyes and face, so that the big man almost quailed when I shouted that match striking so near the balloon was highly dangerous. Küpper immediately sent his sweet smelling cigar flying outside the circle; when I explained that it was the flame, not the tobacco that I considered risky.

Mr. B——, Mr. S——, and the engineer were now chuckling over the alternate indications of official temper, which two of us as the chief actors had displayed in our respective capacities.

"A certain amount of this sort of thing *goes down* like goose stuffing," said Mr. B——.

"And enforces authority and caution," cried Mr. S——.

"Precisely," admitted the teacher, "but I do hope that Küpper will restrain himself, his temper at times is alarming; but see how soft and subdued he looks now that Madame Küpper is approaching; no wonder, she has announced that breakfast is ready."

"Meester Coxvel, Meinherren, beefsteak and coffee all ready."

"No objection," was the answer, as we were well ahead with the filling, "suppose we stop for an hour, Mr. S—— will keep watch until I return, and the men can have their coffee brought out."

"And so I will," said Mr. S——, "but I say B——, not too much steak, and no frogs, mind that."

Mr. B—— simply waved his hand in reply, as the great man Küpper inspired him with a certain amount of awe, which there was no mistaking.

My first ascent from Elberfeld was on July 16th, 1848. It was almost a cloudless day, but not oppressively hot, as a fresh wind blew which made it desirable to call in thirty men to hold the netting.

I had appointed Mr. B—— to be my first lieutenant, and in order to assist me, he had obtained the permission of his pupils, most of whom were present, as much, probably, to see their preceptor in a new capacity, as to patronize me and the balloon.

The recreation grounds where the visitors had assembled, were of an oblong form, and perfectly dry, with gravel

beneath. A vast number of tables were arranged in rows, so that families and parties of friends sat each at their own quarters.

The ladies were nearly all knitting or otherwise at work, and during the instrumental performances, gentlemen smoked their cigars, drank coffee, and conversed in a quiet way, which struck one as making a pleasing contrast with some of our out-door gatherings in England.

Mr. Abraham Küpper occupied a central position at a table fronting the balloon, and was surrounded by a choice staff of patrons, who, as the afternoon advanced, preferred sparkling wine to heavier beverage served in seidel glasses.

Mr. B——, who had most heroically stood his ground against the united force of a strong current of wind, which had ever and anon distorted the symmetrical form of the "Sylph," and blown some of the men over, now sent to me to allow him to retire for one minute, not that he wished to relinquish his post of directing the men, but that he required to speak, for one moment, to Herr Küpper.

On seeing Mr. B—— approach, the noble proprietor who wore a plum coloured dress coat, and a variegated smoking cap, filled a bumper of hock, so that by the time Mr. B—— had wiped his moist brow, and taken a seat by invitation, he found himself confronted with friends, together with an abundance of pungent snuff and cooling wine.

"I wonder which he will take first," asked Mr. S——, watching Mr. B——'s movements askance.

"It's a hundred to one he drinks the wine," said I, but before I had finished speaking, his glass was empty, and

quickly refilled by Herr Küpper, who, with a patronizing pat of the back, called him "gut boy," alluding not, of course, to his smartness with the wine glass, but to his arduous duties around the balloon, by which he drew forth high encomiums from the spectators, as well as from Herr Küpper and myself.

Although Mr. B—— exceeded the time specified by himself for his absence, still I declined to trouble him to return, as I felt sure his physical exertions were already more than he was accustomed to, and I had an object in reserving his powers for the final effort, knowing that when the balloon was let up to its full height, it would roll about with great force, and require all the available strength to hold it in check.

The miniature bombardment, illustrative of the applicability of aërial shells to military purposes, was to take place on a larger scale than at Brussels.

I rather hoped to have Mr. B——'s company in my travels to Cloudland, but resolved not to propose it until the last moment.

When the car was being attached, Herr Küpper, and Mr. B—— entered the inner enclosure, and every assistance was tendered, but the wind unfortunately seemed late in lulliug, and we were frequently thrown into ludicrous positions, by which the company was kept excited, and the juveniles furnished with matter for laughter.

Just before the shells and battery were fixed, Mr. B—— became the "observed of all observers," and created no little merriment and clapping of hands.

I had called him to the car to suggest his ascending, and

at that moment a cruel gust blew the balloon almost down to the ground, and upset Mr. B—— as he advanced, but recovering himself with admirable agility, he seized the netting by way of support, when the balloon again caught the breeze, and rolled round on the other tack, carrying the astonished teacher with it, so that, minus his hat, he was suspended some altitude from the ground, but held on with such resolute tenacity, that a cry was soon raised of "Bravo B——, very brave," and as the "Sylph" backed round on the other side, Mr. B—— was rescued, and again led by Herr Küpper to the refreshment table, where he composed himself and received the congratulations of many of his friends.

"It will never do to take him up after that shaking," urged Mr. S——.

"Right, I will start alone, next time there will be plenty of candidates; please to attach the shells, as I shall slip cable in five minutes."

The band now formed round the car; Messrs. Küpper, and B—— held the last connecting link, and at six o'clock I released the "Sylph," immediately lowered the battery, and on passing down the Jacob's ladder, received a perfect ovation.

The shells fell quite regularly, and made an unusually loud report, reverberating among the adjacent hills on either side of the river Wupper.

The sky being clear from cloud, the smoke which followed each explosion produced a splendid effect, and imparted a totally new aspect to the appearance of a balloon in mid-air.

The "Sylph" not being fully inflated, and the car without passengers, I had some difficulty in retracing my steps after discharging the fireworks, whether the lookers on observed this, I could not say, but on resting half way up the rope ladder, I heard sounds more akin to a thrill of horror than a cheer; no doubt the position of dangling between the car and the battery, looked perilous, but it was not more so than some of the acts of seamen, although excessive height added of course to the risk.

The subsequent journey was very enjoyable, being my first aërial voyage in Prussia.

I had been cautioned, before ascending, against some large forests in the direction I should travel, and noticed them around me, without any considerable opening to come down in.

Being quite alone I was naturally disinclined to extend my journey beyond a reasonable distance, so I brought the "Sylph," after attaining an elevation of 1,500 yards, to within a few hundred feet of the tree tops, and perceiving an open space hard by with a plantation of young pines, I dropped the grapnel just in an eligible clump of trees, and was glad to find that the wind had lulled, and that I was anchored firm and fast.

The car lodged in the boughs and only the balloon remained in sight; but as to whether there were people to be found in so outlandish a spot I began to be doubtful, as I had shouted for some time, and neither heard a human voice nor footsteps.

Repeated shouts had, however, some effect, as I perceived a country girl without shoes or stockings, and one or two

men creeping along in attitudes of amazement towards the plantation in which the "Sylph" was moored; a few wood-cutters and children soon added to the number, and when they got pretty close I shouted again, but it was a wild English ye-upp, more like an omnibus driver's warning than a German call for help.

The result was the people withdrew affrighted; if they could have seen me it might have altered the case, but I was ensconced in the trees, and my voice was neither familiar nor understandable.

Believing that curiosity would prevail, I contented myself by keeping quiet in the car for some little time, and before many minutes had elapsed I perceived the bare-legged girl moving stealthily towards me, supported by followers in the back-ground; I purposely kept low and let out gas, by which means the basket slipped towards the ground as the girl pressed forward.

Just as she got within range I sprang up in the basket and seized the comely creature's rounded arms, and drew her very near to me; she was then clearly less frightened, as she uttered a few guttural sounds accompanied with looks of kindness.

The men then ran up and helped to get the balloon clear of the trees, so that I received plenty of attention; and later, when I went to the damsel's house, her mother made coffee for me, after which I was driven some miles to the railway station and returned to Elberfeld.

My second ascent from Johannisberg took place on July 24th. A third soon followed, but the fourth was chiefly remarkable from the fact that Herr Küpper ascended

with me himself, although he had always said that no real or imaginable inducement would get him up in a balloon.

If Küpper's courage was not in proportion to the bulk of his body he pulled himself very well together at the start. It was only when I left him alone to go down the ladder that large drops of perspiration started from his brow.

I promised to be back soon.

"Yah, aber mein Gott—if you go down headlong," he added, but I heard this not, and might not have understood the German rendering if I had.

When the bombardment of Elberfeld commenced certain utterances did reach my ear in the second car below, but whether I was being cheered or denounced, whether Küpper was sick or joyful, I could not divine; this I know, that when I returned or (to use parliamentary language) when I was promoted from the lower house to the upper, I certainly did notice that my sole companion was in a pitiable plight so far as facial moisture was concerned.

A capacious handkerchief appeared drenched, and still the drops were oozing fast from the expanded pores of his skin. He must have lost a couple of pounds' weight while I was down below. A rapid recovery, however, took place, especially after both of us had benefited by restoratives; then was Abraham more composed, and anxious not to go too far, as he looked forward, I could gather by his pointing to, and his remarks about Johannisberg, that he wished to get back as soon as convenient.

I managed accordingly, and just as the ball-room lights

appeared resplendent, and the band was tuning up for a dance, we entered amidst cries of "Hoch Küpper;" "Leben sie lang Herr Coxvel," &c.; and great indeed were the rejoicings which were, it is perhaps needless to observe, participated in by Mr. B—— and Mr. S——, *cum multis aliis*.

During the autumn of this year (1848) I made a dozen voyages from this place, and the confidence displayed by the proprietor was felt also by Madame Küpper, her daughter and sons, as also by Mr. B—— and a very long list of ladies and gentlemen, who by watching the safe return, and good reports of the pioneers who first ventured, felt satisfied of the pleasure to be derived, and were prepared to venture themselves.

Before making the two concluding trips of the season, a speculation was entered into by Herr Küpper, Mr. S——, and myself, at Cologne, with a view of trying an ascent during the grand visit of the late King of Prussia, on the occasion of the 600th anniversary of the building of the cathedral.

I had no faith myself in the pecuniary success of this undertaking, but the joint speculators were very sanguine of a golden harvest.

Although an immense number of strangers came into Cologne, and the hotels were filled to overflowing, the processions and religious ceremonies so engrossed public attention that the balloon grounds, after expensive preparations, were but poorly patronized.

A large sum of money was lost by these ill-conceived projects, which turned out a serious matter to us.

The last display but one was in the month of October at Johannisberg, and it was a night ascent with fireworks attached to the balloon—but fireworks altogether of a different kind to the shells which I had detached previously. In its way this might be called a grand pyrotechnic display *à la* Vauxhall ; but the specific gravity of the gas was not as on former days, and a humid atmosphere at night-fall increased the weight of the "Sylph" to such an extent that it would not raise the fireworks. I found that the whole weight would not ascend.

A buzz of disappointment then began to arise, but it was not of long duration, as I begged the firework maker to cut away about one-third of the cases, and calling for a rope some 300 feet long, which had been employed before for partial ascents, I got into the ring without any car, and gave directions to fire the fuse and let up to the full extent of the cable.

This was equally effective, and the people were much more pleased than if I had made a bungling effort by being overweighted.

I had afterwards the honour of being carried round the grounds and the ball-room on the shoulders of some of the most respected citizens.

There was yet one more aërostatic exhibition which I was called upon to engage in, and that was in connection with the annual *Shutzen Fest* at Barmen, an adjoining neighbourhood, about three English miles from Herr Küpper's noted locale.

These interesting gatherings are managed in a style of magnificence peculiar to Germany.

So far as the balloon was concerned it was not required for an ordinary ascent, but rather as an aërial chariot to do honour to the "King of the Feast," and to afford a panoramic view to as many as obtained tickets for the privilege of being let up a tolerable altitude over the heads of the assembled thousands.

First came the king with cocked hat, feathers, and gay costume; and then a large silver goblet and a bottle of champagne were handed in; when we—that is the king and the aëronaut only—were let up to drink *Hoch*, to the success of the society.

His majesty accorded me a most fraternal greeting, in the midst of which the people cheered vociferously.

As if to prolong the compliment, the king continued some time with his arms round my shoulders, and this appeared to be the signal for renewed cheering, but Dick B—— who had charge of the ropes, and who knew how such German salutations bothered and perplexed an Englishman, gave a sudden jerk to the ropes, by which his majesty was reminded that he did not occupy an earthly throne; and thus freed from such distinguished favours, I gave the signal to haul down, when other members of the club had, each according to his merit, a ride in the balloon car.

The festivities and the rope ascents were kept up all that day and night. So far as the balloon was concerned, its duties were at an end by day-break, but as the "Sylph" contained sufficient gas to raise me—although it had not been replenished for forty-eight hours—I made up my mind, instead of letting it out, to ascend to a great height, and witness the sunrise.

Although everybody appeared to be fagged out, and I was more fitted myself for rest than travelling, still the opportunity of so glorious a spectacle on a calm autumnal morning was not to be lost.

I therefore hurried on my departure; and slipped away with an easy ascending power, travelling very low for a few miles of country, when the gas began to expand more rapidly, and the balloon mounted up with an accelerated speed, as if it were a thing of life, apprehensive of being late to usher in the cheering king of day.

The barometer at starting was 29·70, and Reaumur's thermometer was 9°. Just before six o'clock the former had fallen in the course of forty minutes to 17·50, and the latter to —3° or seven degrees of frost according to Fahrenheit. The effects of this amount of cold were doubtless greater, owing to fatigue, damp boots, and a want of exercise before starting.

I have been up more than twice the elevation since, without feeling the cold so severely, although Fahrenheit's thermometer has registered several degrees below zero.

The sun's rays in this morning ascent were clear, and though they pass through space without imparting much heat—unless they are reflected and radiated—yet it must be remembered that the balloon itself is a diminutive planet as it were, and intercepts the sun's influence, if the atmosphere is free from clouds.

Before the sky had given the customary indication of sunrise to the city below, it was grand and impressive to contrast the high and rosy dawn, of which I had a view, with the dark gloom still pervading the earth towards

the east; and even when in blood-red majesty the great luminary had risen above the ridge of the distant horizon, the land beneath was as yet comparatively dark, showing thereby the excessive elevation of the balloon.

I determined very soon after witnessing sunrise to seek a warmer atmosphere, and descended about 6000 feet rather quickly; here I lost the sun, but immediately he rose again for the second time, when a large looking tower, a few miles ahead, came into view; and, as I had not observed this place previously, I determined to get as near as possible, and again used the valve pretty freely to accomplish my object. When within 1200 feet of the ground, I was astonished to find that my downward course had been almost as rapid as the rising of the sun. He was again very near the visible horizon. Grand and singular were the views which I had on that memorable morning.

In this part of my experiences, I purposely abstain from giving details of the variations of height and temperature, because further on in the account of my life it will be quite in place to do so.

Even for scientific men, the constant repetition of monotonous tables is calculated to mar the freshness of continuous narrative. Besides, in public ascents for festive purposes, it has never been the custom of aëronauts to dot down more than occasionally the different states of the atmosphere. Indeed, if they attend mechanically to the requirements of the balloon, they have not much time for this work, unless they have assistance.

Without knowing what town it was in advance, I lowered

on the leeward side, and noticed a great many priests and soldiers. As the grapnel trailed over a field, I heard a scream, like the voice of a child. On turning to see if the iron had caught anything, I saw a hare, hooked on to the prongs, but it was knocked off again before the progress of the balloon was arrested.

The town proved to be Munster and after *déjeuner*, and a description of the voyage to several of the good people of the place, I felt the over-powering effects of change of air, with no previous rest for two nights.

Before dropping off to sleep, I asked the hours of the post leaving. "If," thought I, "the first is lost through somnolency, I shall certainly be ready for the last;" but it so happened that the two slipped past, and I did not awake until aroused for *abend brod.*

Early next day I wrote to Mr. S——, telling him of my whereabouts, and inviting him to join me for a few days at Munster. I received no reply, for the best of all reasons, he had not received the news, but intelligence of a rather gloomy character had reached Elberfeld, as it appeared by the *Zeitung* of that town that I had been killed on my aërial journey, having fallen out of the car near Dortmund, half way between Barmen and Munster. On receipt of this intelligence, Mr. S—— and another gentleman named Drebes were despatched immediately to the spot where the disaster was said to have happened, but no authentic information could be obtained, beyond the fact that the "Sylph" had passed over head, at a great elevation, between seven and eight o'clock A.M., on the morning referred to.

The party in search then decided to go on to Munster, but we fortunately met at Hamm railway junction, I having lost no time, after being killed by the newspapers, in getting back to establish my vitality.

It may well be supposed, that the interview on my arrival, was of an exciting order. It was not the first time that I had received the congratulations of people who had believed me dead, but this reception I met with was very sincere, and I am not sure that it did'nt put some new life into one who had been so sensationally deprived of existence by mere rumour.

Ballooning being over for the season, Mr. S—— returned to England, and as I was disposed to remain in Germany for the winter, it was not long before a proposal was made, that I should purchase the balloon and ascend entirely on my own account.

Having agreed to do so, I stayed at Elberfeld for the winter.

Before I left, the revolutionary movement had broken out afresh in the Rhine Province, and I had an opportunity of seeing a few shots fired, and a vast deal of excitement in Elberfeld.

After a great deal of agitation and discontent, a number of Prussian soldiers were on their march to preserve order. I was taking a stroll one day with Mr. B——, when it was reported that the military were approaching. Barricades had been formed already with the pavement stones from the streets.

There was a general uproar. We were spectators of the riot, and saw the mob try to fire the Mayor's house, and eventually do a vast deal of injury.

On the arrival of a battery of nine-pounders, and a few companies of infantry, the barricades were manned, and flags of defiance hung out. The soldiers drew up in the principal square, and towards evening they moved forth, when we were not far from the barricades.

The street in which the first obstacle was raised, had riflemen at the windows; a captain was shot, and several soldiers killed or wounded before the discharge of cannon. The defenders of this barricade were either frightened or blown away much quicker than we expected, but as darkness crept on, the military withdrew, expecting a reinforcement in the morning from Düsseldorf.

During the night, Mr. B— — and I visited the barricades, it was not an easy matter to approach or enter them, but everybody knew the *luftschiffer* or aëronaut, and the English teacher, and no one supposed that we were spies or combatants.

Among the gaily decorated occupiers of the barricades, were several of the men who had assisted as labourers at the balloon ascents; some of these men claimed an intimate acquaintanceship, and although they merely drank small beer when engaged in our service, yet now that the tables were turned, they invited us to drink something stronger, and it was not advisable to offer them a slight by an arrogant refusal.

The hours we spent among the barricades, and in the hotels which were behind them, proved entertaining and instructive.

At Easter in the year 1849, I made the first spring trip at Barmen, but before midsummer I started for Berlin,

where notices were already out, to the effect that I would ascend shortly from the far-famed Kroll's Gardens.

There were two points about my first exhibition in the Prussian capital, which caused it to be well remembered. The first was a public demonstration of the possibility of discharging petards with safety. The second was a riot in the *Thier Garten*, outside the Brandenburg Gate, where considerable damage was done to the shrubs, and a quarrel occurred with the constables, some of whom were severely beaten. A detachment of soldiers was called in to restore order, but General Wrangel was prevented from inspecting my apparatus, and that illustrious soldier was stoned on his way to the gardens, so that the police authorities prohibited any more ascents, and I was ordered to remove the cause of disorder, which was the balloon. But instead of obeying the instructions of the two fierce looking messengers from the President of Police, I caused them to be referred to Miss Kroll, the proprietress. I then ascended, as at Brussels, before the stated hour, offering as a reason, the following morning, that it was easier and more congenial with my feelings, to let out the gas at some distant place, than to be compelled to do so on my first essay in Berlin.

On due application on the part of myself and Miss Kroll, the prohibition against ascending again was withdrawn. I not only did so on June 11th, but on the 19th instant as well. This time the "Sylph" passed over Berlin, and was becalmed for more than an hour, affording an excellent opportunity for the Berliners to witness the bombardment.

There was so little air stirring this evening, that the

descent was made on the military exercising grounds, outside the capital. It struck me on landing, that instead of letting the gas off, I would move the balloon outside the walls of Berlin, round to Kroll's Gardens again, for a second ascent.

This was a difficult and tedious achievement, but the weather was favourable for its accomplishment, and it was my ambition to surprise and please the Garden visitors by exploits which had never been carried out before.

Miss Kroll's brother accompanied me in the car, and we directed a number of soldiers and civilians to march on in the way considered best.

The wonder was that the police did not stop the procession. On arriving at a part of the outskirts, where some trees and water presented a barrier to our transit, an idea struck me that an immense amount of time and labour might be saved, if I dared to strike straight through Berlin, but Mr. Kroll was of opinion that the soldiers would not permit us to pass the gates, unless we had authority to do so.

"Let us try," I urged, "we can beat an honourable and masterly retreat when we are rejected."

The bold way in which we moved towards the nearest gate, with the "Sylph" towering sixty feet from the ground, completely astonished the sentinel, and the guard as well, which turned out and confronted the mob now becoming formidable.

Mr. Kroll was asked, when he explained my object, if I had my permission, to which I replied myself with, "here it is," bringing forth the police permission to ascend that day.

I was not bound, as an Englishman and a stranger, to explain that the *erlaubnitz* said nothing about *returning*, and as the good-natured soldiers principally looked to dates, stamps, &c., the gates were opened to let us through, but very few of our outside followers were allowed to pass, excepting the blue coats off duty, who really were a protection.

The "Sylph" thus passed straight through the city, and was finally restored to the Gardens without accident before daybreak. The small gas works connected with Kroll's establishment was again set to work to generate coal gas, and the next day after being duly replenished, I ascended again.

But there was one great drawback to Kroll's Gardens, and that was the long and weary time occupied in inflating. Their little holder contained only 7000 feet, and what was this towards 32,000 feet, the contents of the "Sylph."

I found too, that the confidence inspired by my already numerous ascents secured me, if I could have taken them, fellow travellers who were ready and eager to pay a goodly premium for ascending under my guidance.

It became desirable therefore to tax the full capabilities of the balloon for passenger accommodation, and as a slow-filling, with heavy gas, made a difference in the lifting power, sometimes of two persons, it will be seen that my interests were, in more ways than one, at stake, and that a more fitting locality for the ascents became in every way desirable.

The *Schutzenhaus*, situated at the opposite side of Berlin, was suggested as most suitable for the filling, and

thither I accordingly went after an amount of delay and circumlocution, which was damaging to my prospects during the finest period of the year.

Here I made a series of trips, always having a full cargo of passengers. During their progress I was induced by a speculative German to try a couple of ascents at Stettin, a seaport and consequently an uninviting place. The chances of success, however, were good, as there was a well built gas works there, and no ascent had taken place previously.

All my requirements were met in first class style, and the use of the gas works yard, a new and commodious place, was granted for the accommodation of the public.

The first journey, which took place on September 2nd, 1849, was somewhat inland, but before the commencement of the second on the 6th, there were grave apprehensions that I should be driven out into the East Sea, and as the wind was boisterous, good fortune appeared to draw me back after going out, but I was favoured again before sunset, as I crossed the Dammsischezee in safety with my two companions and landed on the opposite side without inconvenience. My visit to Stettin was thoroughly remunerative and satisfactory. Having another ascent on September 9th, at Berlin, I returned and made it, my route after that being a long one, as it extended to Silesia.

Ballooning was little known in Breslau, and if I rushed on to that town there was no calculating what amount of cash I might pocket. Making fair allowance for sanguine expectations, and believing that something might be done, I joined a Prussian merchant who had been a good deal in

England, and we started with a business-like arrangement which I had no cause to be dissatisfied with, when it came to various settlements in thalers and bank-notes.

Everything of a public character in Germany required a large amount of patience, time, and good temper, there are so many preliminaries and permissions to be thought of and obtained, that one cannot positively say that he will ascend at such and such a place until the invariable routine has been gone through, and much tact employed in making application without creating enemies. In my affairs there were nearly always difficulties to be surmounted. It was not easy to find a well sheltered ground where ladies as well as gentlemen could assemble, nor was it usual to meet with capacious gas pipes in a spot otherwise adapted for gathering.

We experienced the like drawback in Breslau, and, after repeated efforts, were compelled to fall back on the gas works wherein to admit the inhabitants.

I had obtained sanction for three ascents, and the first took place on September 20th. The local newspapers emphatically stated on the following day that all Breslau turned out to see the English aëronaut mount to the skies.

For the three different classes we had places varying in comfort and price, but the first place with covered seats, was not considered by some hundreds of the spectators, half so favourable for seeing as a pile of coke, whereon both sexes seated themselves, notwithstanding certain damage to the gay dresses of the ladies. My companions were Herr Firle, the director of the gas works, and Herr Gendry, a merchant.

At starting, Reaumer's thermometer stood at 10°, barometer at 29·62, time 5h. 15m. The clouds stratus were 900 feet thick, when at 5h. 32m., height 3911 feet above the sea level, we broke into a clear space, but there was a second tier of rain cloud above, where the barometer read 23·4, the cold here was as low as $3\frac{3}{4}$ of Reaumer. We came down near *Schönbankwitz*, about eighteen miles from Breslau.

The second exhibition took place on September 22nd. The voyagers were Dr. Mettner, Herr Piller, and Herr Schulz. The meteorological features were not so widely different from the first, as to require special notice.

At the village of *Klein-Mochbern* I let fall a parachute with two rabbits in the car, and we descended near *Minkau*.

The success of a third ascent would have been certain, both as regards public patronage and pecuniary results, but it was prevented from taking place by the owner of a small potato field adjacent to the gas works. The people standing outside had done some damage, and the man renting it lodged a complaint with the authorities, but instead of simply asking me, as an Englishman would have done, to purchase the stock or make some adequate compensation, this selfish and mercenary fellow defeated himself; having chosen his remedy he was bound to pursue it. He was not aware that he would be outgeneralled himself. In full expectation of another ascent, he gave out that damages would be increased, and that he would then fall upon the Englishman for immense compensation, which he was sure to obtain.

I had the crop duly surveyed, and no real injury had as

yet been sustained so that I decided without letting anybody know, besides a certain functionary whose approval was necessary, to get my passport returned in order to leave Breslau that very night. As the season was advancing and I wished to take my balloon due north, it was of importance that I should not be delayed by any vexatious proceedings such as that mentioned.

On the day following my departure, the potato dealer was apprised of my having left with balloon, bag and baggage, and that a third ascent would not take place, he then became as may be surmised, terribly irate, and immediately set on foot an enquiry whether the tradesmen employed by me, had been swindled or paid.

There is very little trouble in arriving at conclusions of this sort on the Continent, and when it was found that a good and highly flattering report from the police accompanied my departure, the over-reaching dealer saw that he had been completely done by a stranger, and that the act was countenanced and facilitated by his own neighbours.

The next town I was anxious to visit during the autumn of 1849, was Hamburg. There were reasons why I should entertain great expectations of doing well there.

Firstly, there was abundance of gas to be had, and secondly, there had been no ascent there for many years.

Under these auspices, I started in company with the Prussian with whom I had associated myself in Berlin, and we took up our quarters near the Alster, quite sanguine as to being able to find a public garden or other locality from which to ascend.

My first application was to President Gossler, the head

official and senator, to whom I presented my credentials, I was graciously promised every assistance, and was requested to apply again when a convenient place was found.

We rose early next morning with the express object of exploring Hamburg. Two or three agents, with a view of assisting in the enterprise, accompanied us, and it was not long before a well enclosed plot of ground presented itself; but obstacles arose as fast as localities sprang into view, the chief of which was a consideration (pecuniary of course), which was, no doubt, the custom of the country, but not at all palatable to my taste in the loose way in which it was required to be made; for instance—it was whispered, that the golden key was the thing here to unlock all difficulties, —good, so it is in most places: "But in what form do you propose to apply it?" I enquired of our agent.

"A few pounds to pave the way as a presentation would be advisable."

"Indeed," said I to our Hebrew-looking adviser, "I do not understand that vague sort of trafficking; if the holder of a piece of property will set a price on the letting of it, I will say yes or no!"

"They will let you have it for nothing, but you must be polite and expend a few pounds first with those you wish to help you."

"That is not my style of doing business, and I do not approve of it."

"Then you will not be fortunate here."

"That," I replied, "we can only know by and bye."

After days of laborious enquiry, we ascertained that there was a great deal of truth in what we had heard.

In communicating with the directors of the gas works, we were advised to do the best we could in view of existing practices, but somehow we became irritated at them, and a degree of obstinacy followed which was hardly, perhaps, in accordance with worldly wisdom.

"At any rate," as I observed to my joint speculator, "we will strike out alone, and try to do without these Jewish negociators."

When we were seen to search about without companions or agents, great was the laugh at such British stupidity and meanness, but when we selected a piece of land, and the builders with their carts and boards were seen to assemble, and it became known that a vast *cirque* was to be erected in the most charming locality, then it was admitted that we were decidedly knowing, and had done the smartest thing attempted in the free town for some considerable time.

Having then, without the co-operation or approval of the German Jews, chosen an eligible plot upon which we were permitted to erect a wooden enclosure of about 150 feet in diameter; notices were posted that an ascent would take place on the following Wednesday.

The local press cheered the venture with the most encouraging paragraphs, and took a retrospective glance at my previous ascents in Germany. This act of kindness was sufficient to ensure a successful campaign, the more so as my first ascent in October went off with great *éclat*, and I took with me two passengers, Mr. Ballheimer, and Herr Rieck.

These gentlemen, who journeyed with me into Holstein,

came back with such a stirring account of cloudland, that I was safe as to passengers for the next three voyages. I made altogether four before the close of the season, the last on November 9th, was a remarkable trip, it will be interesting therefore to append the more striking particulars.

The final ascent was preceded by a number of captive trips to the extent of a rope two hundred feet long.

Many of the first-class people of Hamburg including the president and some of the senators, went up thus far, but the most popular candidate was a heroine weighing at least nineteen stone, and attired in a humble cotton dress, with a huge time-worn umbrella tucked under her left arm.

I had just decided upon concluding these captive ascent when the goodly dame burst out into an audible lamentation that she had travelled, I don't know how many miles, on purpose to see the English balloon, and now her chance of going up in it was lost.

The spectators laughed heartily, and inferred by her corpulent appearance that her chances for a ride were few indeed. A policeman endeavoured to check her zeal, but she saluted me with her umbrella, and in return for this rough but well-meant compliment I left the enclosure and offered the good soul my arm, escorting her to the car amidst a roar of merriment which lasted for some minutes. Orders were given to let out to the full extent of the rope, and up we went amidst deafening cheers and lively music when the lady returned thanks with her umbrella and repeated the noddings from a shovel-shaped bonnet which bespoke her humble—though at the moment elevated—position.

This little episode being completed, I summoned the aspirants for aëronautic honours. They were Mr. H. Zeise of Altona, Dr. Braun, and Herr Kruss.

The barometer on the earth was 29.1½, and the temperature 10° Reaumer. We were eighty-eight Hamburg feet above the sea level where we started, and the wind was south.

The "Sylph" ascended soon after 2 p.m., and although the breeze was fresh the sky was clear, so that a fine view of the town, the Alster and the Elbe was to be had immediately on rising. After letting go a parachute and watching its downward course for ten minutes, Herr Zeise drew forth a bottle of champagne which had been some years in his cellar, and prepared us for a toast. It was not to be one of a personal or flattering character, but a heartfelt sentiment called forth by the country we were going in the direction of.

After discharging the cork which rolled away earthwards, Herr Zeise with uplifted cap and radiant face which inspired us all with enthusiasm, cried out "*Schleswig-Holstein lebe hoch.*" The other Hamburgers cordially echoed the feelings expressed, and I was ready myself to accord almost with anything, seeing that my companions were so friendly and communicative.

After the glasses were replenished there was an interchange of civilities in which the pilot was not neglected, and at three o'clock we became rather more philosophical and took down the following observations of elevation and time, although these little records in no way interfered with conviviality and enjoyment:—

Time.	Barometer.	Height in Feet.	Thermometer.
3· 5 ...	24·6·0 ...	3348 ...	10° R.
3·10 ...	24·3·2 ...	3628 ...	
3·15 ...	23·0·4 ...	3911 ...	
3·20 ...	23·10·7 ...	4084 ...	
3.25 ...	23·11·3 ...	4923 ...	4° R.
3·30 ...	23·7·3 ...	5433 ...	
3·35 ...	23·10·2 ...	4185 ...	
3·40 ...	24·1·0 ...	3850 ...	
3·45 ...	25·1·5 ...	3786 ...	6° R.

As we knew our direction was towards Kiel, I arranged just before 4 o'clock to descend, this was the more desirable from the fact that we were surrounded with cloud and could not see far ahead or beneath. When the balloon was within 600 feet of the earth, the report of several small arms aroused our attention, especially when the discharge was followed by the whirring of flying visitors in the shape of lead.

"Is it possible we have been shot at?" asked Dr. Braun.

I replied by begging the doctor to emply a bag of sand, and did so myself as quickly as possible.

There was little doubt in my own mind that we had been made a target of, because I distinctly heard the "Sylph" struck in the region of the equator, and discovered holes in that part afterwards.

Our downward course having been checked, we glided in a slanting direction towards the earth; but the attitude of the country people confirmed the belief that we were viewed as hostile rather than friendly visitors, and instead of the villagers greeting us as usual, they kept aloof, fired,

and were presently joined by others with rifles, and had I not requested Herr Zeise to tell them we were friends from Hamburg, we should no doubt have received another volley directed at our own heads instead of the "Sylph."

When this was explained the people ran to us and stated that they had taken us for Danish spies, and had really shot at the balloon.

I now proposed that instead of letting off the gas two of us should go a little farther.

Herr Zeise was allowed by general consent to have the preference, the other gentlemen being anxious to get back and report themselves.

We took in some earth to make up for the loss of weight, but the Holsteiners very correctly guessed that by ascending again we were not over well satisfied with our reception, notwithstanding the explanations about being taken for Danes.

We left the place where we were fired into at 4h. 27m., after which the following readings were taken of the second voyage :—

Time.	Barometer.	Height in Feet.	Thermometer.
4·45 ...	24·6·0 ...	3306 ...	5° R.
4·50 ...	23·7·3 ...	4378 ...	
4·55 ...	23·1·7 ...	4950 ...	3° R.
5· 0 ...	23·6·8 ...	4430 ...	
5·15 descended near Kiel.			

It was only the lateness of the season that prevented the repetition of my autumnal ascents; the public were anxious that they should not cease, and the seats in the car were

bespoken for at least half-a-dozen trips. I determined then to re-commence in the spring of 1850, and went back to England in order to spend the winter at home.

In the year 1850 I returned to Hamburg, and before ascending gave lectures on aërostation at the *Ton Halle*, after which a new cirque was erected outside the *Dammthor*, where I made several ascents.

When the fine weather commenced two or three distinguished men came northward on purpose to accompany me. The first was Count Schaffgotsch, of Berlin, a scientific man and well-known amateur chemist. The Count, by his own wish, was the only passenger on May 22nd, when we journeyed into Hanover.

On May 26th Count Paul Esterhazy did me the honour of taking a seat by my side, and opposite to us sat Captain James, an Englishman, and a merchant of Hamburg.

We had a splendid trip in the direction of Lubeck, and there was one incident attending it which vastly pleased the Hungarian nobleman, and produced no small amount of excitement at our descent.

As we were travelling rapidly in the direction of the East Sea it was necessary to come to an anchorage, after emerging rather suddenly from a dense cloud. On the leeward side of a wood a good landing place was descried, but in scudding over the tree tops the grapnel caught a lofty branch, and the "Sylph" was brought up unexpectedly while we were yet hovering over the forest. There were only two courses open to us for getting free; the first was to slip the cable and leave the grapnel behind; the second remedy was for one passenger to descend the rope and

loosen the iron, and get down the tree as best he could. My own duty consisted in remaining by the "Sylph," for the guidance of the remaining passengers, but fortunately Captain James was ready for the emergency, and dashed over the side of the car in British seaman fashion, lowering himself away hand under hand as we cheered him down until he was lodged in the branches, and reported that he could push out the flukes of the grapnel in a "brace of shakes."

The noble fellow lost his hat in descending, which was blown away and stuck in a bough.

Before the iron was pushed out, I asked what height Captain James had to go down and whether he could manage the tree.

"Never mind me," said the sailor, "look out for a lurch and do not go far, as I shall be rather out of my reckoning when I get below."

Having cleared the trees I threw open the valve to its full extent, and we made good a landing not far from the place where James landed on the tree top.

Two or three men were immediately sent to the wood with Mr. H——, our fellow voyager, to assist Captain James.

Some hundreds of country people collected in an incredibly short time, and before the gas had escaped, another hundred or two bore down upon us with an object of attraction in the shape of a sturdy but rather short man with a white kerchief bound round his head. The mob appeared to be impressed with the belief that the robust stranger was either wrong in his head or injured in that part.

He came tripping along with a firm and buoyant gait, but had evidently lost temper, and his hat into the bargain.

"Do pray," said Captain James, "assure these good people, that I am uninjured, some of them saw me come down the tree rather sharp, and no doubt take me for an orang-outang, others imagine my figure-head is smashed—do tell them I am all right, and as lively as a kitten."

"Of that I am sure they have had convincing proof; remove your handkerchief and they will then see that your head is as sound as need be."

The Captain did so, and when the country people comprehended that he had lost his hat, a cap was tendered for his use, which was accepted and paid for.

After accomplishing other voyages from Hamburg, I directed my steps to Hanover with the intention of travelling South, so as to reach Vienna.

The only spot in Hanover where an ascent was practicable, happened to be a public garden, situated on the Marien Island, and pretty well adapted for the required purpose. One drawback only to this locality was a formidable row of poplar trees, over which the balloon would have to pass in case the wind blew towards them. The very first time the "Sylph" was announced to rise from Hanover, which was on July 3rd, the wind blew fiercely in the direction of the high trees. The filling took place about twenty yards from their base, and the gas flowed freely, so that at the appointed time, the silken globe was distended fully, and but one sentiment prevailed throughout a large assemblage, which was the certainty of the "Sylph" being dashed against the trees as it rose in

so strong a wind. To say that I did not share in this grave apprehension would be untrue. I knew too well that it was hardly possible to escape. The balloon rolled round and round in an alarming way, after the retaining bags had been removed, and I expedited the start, calling upon my proposed companions to bestir themselves, and hasten into the car. The wind freshened every minute, and the tapered poplar tops bent in frightful curves, showing the extreme pressure of the atmosphere, and consequently, what was to be expected and guarded against.

I placed a passenger at either end of the car, giving them each a large bag of ballast, with instructions to discharge them the moment I said No. 1 and No. 2. Then imparting a large amount of ascending power to the "Sylph," I waited as it rolled its huge volume about, until I saw the tops of the trees comparatively unmoved by the wind, instantly I pulled the trigger and up we bounded. A general shriek burst forth, and not without reason, for the upper part of the balloon was struck by a sudden gust and in another second it would have been wrecked among the trees had not the orders to "let fall sand bags" been splendidly executed; for three of them, my own included, were plumped out simultaneously, and there was a sharp vertical spurt in consequence; this, however, did not altogether clear us, as the lower hemisphere of the "Sylph" caught the yielding boughs, but the silk was well protected by cordage, and the whole passed safely over, eliciting a shout of satisfaction of the true sensational order.

We then bounded upwards with a pendulum-like movement, caused by the car or centre of gravity being disturbed by the collision with the branches; but this soon ceased, and I found that in less than three minutes we were 4000 feet high.

I was glad that Herr Dorn, the director of the gas works, was with me, as he read the barometer while I took the necessary precautions to allow for rapid expansion, which was taking place fast, owing to the great weight we we had lost in order to get over the trees.

When we steadied somewhat, and were moving in a horizontal direction at an average height of about 6000 feet, I raised myself into the ring, and, by a peep into the neck outlet, I felt satisfied that we had sustained no fracture in the envelope, and this fact enabled the passengers to feel pleased and composed, so that our feelings afterwards were of the happiest kind, and when it was found that our descent at *Celle* was not accompanied with unpleasantness, as our anchorage was effected on a high bough with grass beneath, we had every reason to feel satisfied with our own good fortune and the behaviour of the "Sylph," which so nobly carried us over the trees and landed us without a scratch.

At Celle we heard from an attaché to the King of Hanover that his majesty had witnessed the ascent, and felt great concern for our safety during those anxious moments when our lives were in jeopardy.

Notwithstanding that difficulty respecting the trees, a second invitation went forth for another ascent on the 5th;

but this time all dread, as to a too intimate acquaintance with the poplars, entirely ceased, as the air was in perfect repose; so much so, that it was impossible to decide which way we should go, there being no clouds to judge by, and as to other signs—such as the direction of smoke and pilot balloons—even these were not faithful guides, as they rose straight up and inclined to no fixed course, but wandered between north, south, east, and west, as if totally becalmed in a balmy summer atmosphere.

On being asked what sort of weather it was for aërial travelling, I replied: "Superb! this is even a ladies' day, when the return to *terra firma* need not cause the crushing of a daisy."

As the inflation proceeded, I requested it to be intimated that at six o'clock I should commence partial ascents.

Long before that time, the Marieninsel looked gay and inviting, filled with a select company who were attentive to the performances in the Summer Theatre, which forms so delightful a speciality at the *alfresco* amusements in Germany.

At the various rows of tables, the ladies sat working, and the fumes of the gentlemen's cigars rose high in the still air, while the strains of music burst sweetly on the ears of the listeners, who calmly awaited their evening enjoyments, as if nature and art were subdued by oppressive heat, when the sun was declining behind the western foliage.

After the conclusion of the operatic piece, preparations for a captive ascent drew a crowd of visitors to the lawn, and a party of ladies was first formed, the young and

handsome having induced the middle-aged and portly to treat and accompany them in a short tour.

A blue-eyed English girl laughingly remarked: "If the rope were to break, what should we do?"

"You would be transported with delight," was my answer.

I was about to make some other silly observation, when my assistants let up the balloon, and we were getting a view of the housetops.

Before our little pleasantry had ceased—in which one of the matronly ladies took as lively a part as the British maiden—we found ourselves being drawn down, when a second party was ready, with this difference, that the sexes were equally divided, two gentlemen having each a lady in charge.

Other parties were made up more quickly than they could be accommodated, and altogether we had an hour and a-half of this kind of amusement, when the time for my final departure arrived, and the gentlemen, who had for days previously booked their places, came anxiously forward, fearing, as they stated, that the heroic courage displayed by the first occupants of the car might possibly induce the aëronaut to forget the gentlemen, and bear away with him the angels.

This opportune bit of flattery having been accepted, particularly by the ladies who first ascended, I beckoned Herr Stecker and Herr Frischen to join me, and we gently left the island at 7.30 amidst a salvo of guns; and, after rising 600 feet perpendicularly, the "Sylph" was wafted towards the palace, over which we remained suspended for at least half-an-hour.

Afterwards the balloon remained in sight until the descent was made; by that time it had assumed a small, dark, globular form, and was distant fifteen miles from the place of setting out.

After I had repeated these exhibitions, I went to Dresden, and there had the use of the Schutzenhaus Grounds.

On my first appearance, I was honoured by the presence of the Queen of Saxony, and the Royal Family, as also the *élite* of Dresden, who were not disloyal, as can well be imagined. Dr. Meisel, my fellow-traveller, had a pleasureable journey near to Oberau, where we landed.

On the 18th of August there was a second ascent when an architect, by the name of Louis Prengel, was captivated into the enjoyments of cloud scenery; this time we alighted near Pilnitz.

It must not be supposed that in this history I have fully described the whole of my ascents; what I have proposed to accomplish, is an outline of the more prominent features of my experience. I have not, therefore, entered into every trip, but have sufficiently traced my movements from year to year, so as to connect my travels from the time of my first ascent to the date of writing my life. The conclusion with further particulars, chiefly scientific, will, it is hoped, be published in a subsequent volume.

Although I had intended to reach Vienna before the close of the season, taking it in regular order, and going next to Prague, yet I found a number of difficulties in Bohemia which induced me to reach Moravia as quickly as possible,

in order that I might take Brünn and the Austrian capital before it got too late for the inhabitants to assemble in places of public resort.

In Brünn, some weeks were spent before the necessary *erlaubnitz* and other preparations could be made.

At last I could find no better place than the gas works, and although the yard was not particularly sheltered from general view, still I felt inclined to chance pecuniary success, as a great deal of interest was manifested in the visit, and I was assured that all would go prosperously if I would but make the trial.

I did so on September 22nd, and from the moment the gates were opened there was an uninterrupted stream of visitors, which left my own mind certain that I had not misplaced confidence in those who advised me to speculate with boldness.

At a quarter to six, the "colossal machine," as the Moravians called the "Sylph," rose towards the skies, with two gentlemen besides the "air-captain."

The voyage terminated near the village of Babetz.

Another successful ascent was made from the same spot on October 7th, when Herr Alexander Spindler and Herr Leopold Spitzer were my companions. We let down a large parachute on this occasion, with a dog in the car.

Leaving Brünn I made straightway for Vienna, where I learnt that an exhibition would have to be made in the Prater, and that on no account could I expect to have my balloon in any other spot.

Now the Prater was an excellent park-like ground for a spring or summer gathering, but it was now getting late in

October, and my only chance was a more suitable locality in the inner town.

Just opposite the Palace was situated the Volks-garten, a fashionable place of resort, well adapted for my purpose.

The lessee of this famous garden was an Italian, and I got a good introduction to him, and proposed that he should have such an interest in our exhibition, as would stimulate him to exertion, that is, to obtain from the authorities permission to proceed.

This course answered, but a fresh obstacle arose as to the gas, there were no pipes large enough to fill the balloon, but owing to the kindness of the gas superintendent, and the readiness on my part to incur a large outlay, we surmounted even this, and my first ascent came off towards the latter end of October 1850.

The Emperor had left Vienna when I was there, otherwise he would have seen the balloon from the palace windows.

Before the upper part of it was seen above the trees, the glacis around the ramparts was filled with thousands of spectators.

In the gardens, were a gaily attired assemblage of military officers, civilians, ladies, and children, so pleasingly blended as to costume and appearance, that an Englishman could not fail to be struck with the scene.

The applicant for a lofty view of Vienna was neither an illustrious warrior, nor a robust citizen, but a fair young lady whose parents were of respectable position, and who had persuaded her papa to visit me at my hotel, and secure the first seat for his daughter.

The father, an amiable, sensitive man, was averse himself, as he candidly stated, to his child going up, "but," as he said with affectionate emphasis, "she has been a good and dutiful daughter, and this, the fixed idea of her life, must not be thwarted."

Several hours before the stated time, a rumour gained ground, that the lovely Fraülein was about to become the observed one at the Volks-garten.

I fully expected that the young lady's entrance to the car would be the signal for a host of gallant fellows to step forward and beg the privilege of a seat with so beautiful a creature, but no one stood forth, and I felt almost certain of having the honours entirely to myself, when a tug at my coat from some one outside the car caused me to look behind.

I there beheld a young man looking pale and perplexed, who wanted to know what the fee was for ascending. If my memory serves me right, I mentioned a high price as I was annoyed with this candidate for not presenting himself sooner.

The premium, however, did not deter the gentleman from getting in by my side, and no sooner was he safely seated than I liberated the "Sylph," when loud and hearty were the hurrahs, and numerous the raised hats and waving handkerchiefs in honour of the fair voyager.

Our course was directly over St. Stephen's lofty tower, which is much higher than St. Paul's Cathedral, but which soon looked diminutive beneath us.

The lady, when I invited her to do so, was most observant, but the gentleman regarded with indifference the opening

panorama, while I could not but notice that his attention was engrossed by the Fraülein, and indeed to such an extent that I proposed he should sit by her side so as to relieve her from glances so direct and full of meaning.

The gentleman assented readily to my proposition, and sprang so quickly from my side to that of the young lady, as fairly—or rather unfairly—to make the car spring again.

When we had passed over the city and were drifting down the Danube, I called upon my passengers to observe a fine view towards the East, the young lady already had her eyes directed that way, but the gentleman never once looked down, but continued to direct an admiring glance towards the Fraülein's features, exclaiming all the while, "Beautiful, beautiful," by which I very naturally inferred that he did not mean the distant landscape, but the pleasing form so near to him in a cloudless sky.

Now when we lost the busy hum of the capital and traversed a country route, I proposed the Fraülein's health, and, to do the gentleman credit, he complied with alacrity to the suggestion and offered to do the honours to a bottle of my own champagne, but before the cork was set at liberty, a neat basket was uplifted by the young lady and in a moment some delicious cakes and a bottle of Hungarian wine diverted our gaze, and what to do the gentleman knew not. He inclined, however, to the fair one's wine; indeed, we both patronized the refreshing draught, which was sweet and unexpected.

The Fraülein on her part was kind enough to say something pretty about me and my kindness, but the gentleman

never said Hoch! and I believe he wished he could have managed the balloon himself and dispensed with my services. However, though we had high words, we did not fall out, but returned to terra-firma capital friends, and so considerate was I of the heroine's personal comfort, that immediately on landing in a grass field, I begged the gentleman to fetch a conveyance, and talked to her myself until he returned; I then begged of him to convey the Fraülein to the nearest hotel while I emptied the balloon, promising to join them by the time coffee would be served at Kaiser-Ebersdorf where we descended. There is only one other point connected with this event, which it is absolutely necessary to mention, and that is, that about six months after this aërial excursion, my two companions were united in the bonds of matrimony, and that on hearing of this, I understood most fully why it was that the gentleman was heedless of terrestrial objects, and so remarkably observant of heavenly.

After this admirable and romantic commencement in the Austrian capital, my prospects for a continuance of good fortune was as bright as could well be wished. The papers and the public were as busy as possible about the adventure, and wondering who would go up next; when I received an intimation that the authorities would not permit another ascent so close to the palace, as the collection of an immense mass of people on the glacis must not be repeated—the Emperor having returned—but that His Majesty wished that I would ascend during the next spring from the Prater.

The order of the day was, of course, ready compliance,

but the cost to me was great, although the first attempt had brought in a handsome return, and but for this prohibition I might have realized another goodly sum.

I now decided upon returning to Berlin for the winter; but it was difficult to get away, as the principal railroad was monopolized daily by the Austrian soldiery, who at that time were about to demonstrate their forces in front of the Prussians, without, however, coming to those heavy blows which have been exchanged since, in battles fought on the very ground I have travelled over in my balloon.

In the spring of 1851, instead of going home to see the Great Exhibition, I followed up my advantages in Germany and recommenced in Berlin, where I again made several ascents. The most extraordinary as far as danger went, was one from the Schutzenhaus in April.

There was a Prussian labourer who became my inveterate enemy, because I had engaged him as a right-hand man, and had discharged him afterwards for bad conduct. From urgent intercession I had taken him on again for a fresh trial, and although I never liked the look of the fellow, yet somehow he cajoled me, and being very handy and ingenious, I suffered those unfailing first warnings to go by unheeded.

On a splendid evening I ascended in company with Mr. Lacy, Mr. Accum, and Herr Henkel.

When we reached an elevation of about 3000 feet, it became expedient to open the valve; on pulling the cord, one of the top shutters broke and remained open, leaving an area for escape of twenty-six inches by twelve, which allowed so large a volume to pass out that

a rapid descent commenced, which all our ballast could not check.

I lost no time in doing everything that was possible for our safety, but the escape of sustaining power became so great that one-half of the "Sylph" was deprived of gas; the result being, that our fall was so rapid and perilous, that nothing short of a favourable open spot saved us from broken bones. Fortunately, in one respect, we came down in a well cultivated garden, and the car coming on to a fruit tree the shock was lessened, so that none of us were hurt.

It came out afterwards, that this scoundrel was seen to tamper with, and indeed partially sever the connecting lines of the valve, by which diabolical act we might all have lost our lives.

The next noteworthy voyage was from Berlin into East Prussia, in the direction of Dantzig; a run of nearly 200 miles in about five hours, characterized this truly pleasurable tour.

I had with me Herr Hildebrandt, artist to the King of Prussia, and Herr Henkel.

After we had been up twenty minutes, we came within view of the river Oder. "So soon," exclaimed Hildebrandt, "why it is twenty-five English miles from the city, we must be travelling at railway speed."

"Yes, we are, and a great deal faster than railway speed in Germany." Although the wind was strong, there was no perceptible motion in the car. A stream of murky-looking cloud was drifting along towards the Baltic, and fine moist mist frequently surrounded us as we dipped into the vapour, but the barometer showed that it was more than

1600 feet thick, as we occasionally varied that much in altitude without emergiug into sunlight, or within view of the earth.

After we had been up two hours I let out some gas, to see if any of the villages or landmarks would present a familiar aspect to either of the voyagers; but they confessed to having passed beyond any place they were acquainted with.

As we had far exceeded the ordinary limits of a public trip, I proposed that we should go on all the time we could see land in advance.

By and bye, darkness set in apace, and we could just discern—towards the north-west—a line of coast to the left of our apparent route. From what we could make out of the land, it was not highly cultivated or thickly populated.

There was a residence ahead which it was desirable to approach, and I lowered with that intention.

Our landing was rough but secure, and we were brought up in a hedge surrounding a sort of common, with a house distant a mile or so, having lights in the windows.

When the gas was let off by our united aid, we steered for the house, leaviug the balloon on the ground until we could get assistance.

In proceeding up a cross country lane, no inhabitant of the wild strange place was met, and we were anxious to ascertain where we were, and how far we had travelled. Not until the iron gates of a baronial-looking seat came in view, did we hear voices.

Neither our questions, bearing, nor manner were pleasing

to the gate-keepers; they evidently regarded us with suspicion; and when we stated that we came from the clouds in a balloon, and had left Berlin that afternoon, our story created doubt and caution.

"If you will take my card to the Baron," said Herr Hildebrandt, "I dare say we shall be admitted to his presence."

The card was sent up, and the Baron himself came down, but further explanation was required before the gates were widely opened. I happened to have the Berlin "*National Zeitung*" in my pocket, of that day's impression, which could not have reached the neighbourhood by the time we arrived.

"But where is your balloon?" enquired the Baron, "I have not seen or heard of it."

"We not long since descended on a barren waste of land some half hour since."

"Enter gentlemen, and I will call together a number of the household and assist you to recover the balloon and bring it up to the Hall."

Lanterns were at once procured, a couple of horses with a cart put to, and, with half-a-dozen followers, the Baron and ourselves repaired to the common; but alas! all was blank and desolate.

The difficulty of finding the balloon then presented itself to our minds, and we looked like the veriest impostors when we were rather sharply interrogated as to where the property was situated.

As the only hope of finding it was by catching the disagreeable odour of the gas, I volunteered myself to go

forth like a hound and endeavour to find it by the assistance of the nasal organ.

I was wandering almost in despair when I caught the aroma, or whatever else one may style it, and cried out lustily, "Here it is." The searching party came up in a trot, and when once the Baron ascertained the truthfulness of our statements, he shooks hands warmly and escorted us to the Hall, where we were treated with every kindness, and had beds provided, and a carriage in the morning, until we came to a place where extra post was to be met with.

Several other ascents were made in Berlin before I left, but being anxious to visit Prague I made the best of my way thither while the summer was yet in its prime, and after exhibiting the "Sylph" first of all partially filled with atmospheric air I then arranged an ascent, and having in that town a good friend in the person of Herr Leonhart, a gentleman very fond of aërostation who had ascended with me before, all went swimmingly, and my first appearance before a Bohemian assemblage was made on the 13th of July, when we ascended and travelled forty miles in two hours.

Two or three other ascents took place in Prague before I left, but on reaching Vienna I was taken ill, and before I recovered it became too late to avail myself of the Emperor's hint to visit the Prater.

My next movements were directed to Leipsig, where I intended to do business during the great October fair.

My reputation, such as it was, preceded me, for I found the newspapers already welcoming my arrival, and speaking

of my numerous ascents in Germany in a liberal and encouraging tone.

The gas works' yard was again the only available place to get the balloon filled in quickly.

Leipsig, after the business fair, wears a very animated appearance. About 80,000 strangers visited the town at this time, and everything good and legitimate in the way of art and science is sure to meet with its reward.

The date of my first experiment at the gas works was September 28th. Dr. v. Keller, an inhabitant of the town, and a scientific man, was my first patron; he wrote an excellent account of what he saw and felt, in one of the local newspapers, and this had the effect of causing others to ascend in the several journeys I made afterwards.

On the second occasion, Dr. William Hamm joined me, and subsequently Herr Andra, Herr Flinsch, and Herr Gerber, were passengers.

Before I left, an amusing novelty came off at the Great Hall, in the shape of a balloon concert.

The "Sylph" was about two-thirds inflated with a wind machine in the centre of the Hall, and a regular band, headed by myself, entered through the neck valve, one by one, and then played a number of tunes to the delight of a large company.

This was my last undertaking in the year 1851, after which, in order to comply with the earnest wishes of my wife, whose health was delicate, and who craved for Old England, I bade adieu to Germany, and resolved to pursue ballooning in the country of my birth, notwithstanding the discouraging taunts of a few of my relations.

1852.

The votaries of ballooning, like the followers of any other pursuit, have their mutual jealousies. The renowned Mr. C. Green was, at the above date, gradually relinquishing aëronautic duties. Age was steadily ereeping upon the veteran, and ambition was prompting one or two others to prove themselves eompetitors and seientific sueeessors. Lieutenant Gale had lost his life after aseending from Bordeaux, and his patron, Mr. Goulston, had determined to follow aërostation enthusiastically. This latter gentleman was not what the publie would style a mere professional balloonist, but an aspirant, who was well to do in the world as a floor-cloth manufaeturer. On returning from the eontinent, I gave Mr. Goulston a friendly eall, as we had more than onee been up together, and mueh enjoyed a ehat about our favourite study. I then learnt that it was his intention to make aseents from Cremorne Gardens, as well as other plaees, and that the probability being that I should go abroad again, he imagined that we should not oppose eaeh other.

I distinetly remember objeeting to this idea as to my own movements, stating as a reason that I had myself some tempting offers to aseend in and about the Metropolis. I promised, moreover, if he was determined to take the West, that I would try my fortune in the East of London.

Mr. Goulston was the proprietor of the balloon "La Normandie," and he had just built a new one of smaller capaeity, whieh was about to make its maiden ascent

in the forthcoming Whitsun holidays, from Belle Vue Gardens, Manchester.

Strange to say, the very first attempt proved fatal. Mr. Goulston, who ascended in a strong wind was dashed against some stone walls, and lost his life.

He had, it appeared, a very imperfect grapnel for stopping the balloon, but whether he attempted to get out of the car, or not, could hardly be ascertained, although he was known to have determined upon some scheme by which he thought it possible to let the balloon go to the mercy of the wind, whilst endeavouring to save himself by springing from the car.

This untoward beginning was the means of bringing the ill-fated balloon into my notice very shortly after this sad event.

Mr. Goulston had engaged to use it at Cremorne Gardens; intimations of an intended ascent had been published in the newspapers, and I was immediately applied to for an ascent with my own balloon in the place of Mr. Goulston who was killed.

Mr. Simpson, the lessee, then informed me that Mrs. Goulston had applied to him to purchase the balloons, but he would be glad to have my judgement as to the value and construction of the smaller balloon, in which the aëronaut had lost his life.

On examination, I found it to be of good make and material, and when I was asked if I would ascend in it, I unhesitatingly replied: "Certainly, provided I use my own grapnel and ropes."

After I had made a few trips with it, the accident could

no longer be attributed to imperfections in the aërial machine, and it was purchased by Mr. Simpson, and named the "Prince of Wales." It thus happened, most unexpectedly on my part, that the West-end gardens, as well as those in the East, were at my command.

Having overcome the objection, which owing to family scruples I had formerly felt, to appear professionally in England, I made up my mind, that having once done so, I would go ahead, and make as many ascents as possible during the season of 1852.

Although it was the year after the Exhibition, and there was not much to be done, as my good advisers supposed, yet I resolved to show that it was possible to make more ascents in one year, than had been made by several aëronauts, during the past three or four seasons.

I made arrangements, therefore, to ascend from the New Globe Gardens, Mile End Road, not far from the site of the People's Palace, also from the Eagle Establishment, City Road, and from the new grounds, which had just been started at North Woolwich, under the name of the Pavilion Gardens.

What with Cremorne and the above named localities, I ascended three or four times in a week, and at the termination of 1852, added thirty-six voyages to my former ascents, which dated in rapid succession from my first as an amateur in the year 1844.

There was one peculiarity about the ballooning at North Woolwich, which caused a fund of amusement on the Thames and the garden esplanade; this consisted in crossing over from the gas works at Woolwich, the car

being fastened in a ferry boat with a steam-tug ahead, which towed the balloon across the river to the Pavilion Gardens.

On one occasion I was engaged somewhere else, when the directors particularly wanted an ascent. I recommended an aëronaut with whom I had long been acquainted, and the way he acknowledged my kindness was by finding fault with the manner I moved my balloon, offering at the same time to show the real and scientific style of doing it properly. But this aëronaut lost his balloon in the attempt, it bounded away out of control, burst in the air, and came down a wreck.

My concluding ascents in 1852 took place at Glasgow. Mr. Maxwell, my *compagnon de voyage* on the second ascension on October 14th 1852, confirms the account descriptive of our own feelings, and which is a very fair representation of other people's when they go up in a balloon. A few extracts will be useful, as they apply generally to the subject.

"Before taking a seat in the car for the first time, imagination is busy picturing the scenes and sensations which belong to an aërial voyage. However great one's courage may be, there are always little fears as to personal safety, and it is owing to this feeling before starting, that the first great impression is made on the mind, when the traveller finds, on rising, that the transition is not accompanied by any of those disagreeable emotions which most persons are apt to connect with that mode of travelling. As the balloon leaves the ground, two-fold astonishment seizes the mind, first—as to the vastness and splendour of the view, secondly—that the effect produced in looking

down is not what would be supposed, judging from lofty surveys on the tops of high buildings, in fact, fear is lost in admiration, and there is a joyous consciousness of safety, which favours calm observation.

"The earth presented to our view an immense concave surface, that part immediately beneath being the deepest, this variegated picture may be compared to a map. A certain degree of confusion, however, attends one's early efforts to recognise particular localities, and here it was that the aëronaut surprised me by the facility with which he pointed out the leading features of Glasgow, although they were new to him.

"First he directed attention to the Clyde, pointing out the different ship-building yards, and mentioning the names of the proprietors. Anon he took me round the squares, along the streets, up to the railway station, and off to the distant country. I was bold enough to inquire how it was Mr. C—— was enabled to trace Glasgow and its surroundings with such accuracy, having made only one ascent previously. 'I will tell you,' he replied, 'I always make it my business before ascending, to acquire every possible information as to a strange locality, much is to be obtained from local maps, &c., but more from personal observations as to public buildings, thoroughfares, roads, and other conspicuous objects, which once seen, familiarise themselves again in the bird's eye view, and thereby lead to detection.

"So model-like and regular was the face of the city, that it was difficult to reconcile the belief that there, beneath, lay the thrifty, solid-built, populous port of Glasgow.

"A view from on high is certainly a great leveller of human distinction—the contrast of a splendid residence with a humble dwelling is not very great when viewed from the range of the clouds, nor do lofty spires, hallowed walls, or public monuments, command, however much they deserve, that respect which they are accustomed to receive below. Everything is reduced to the smallest possible dimensions, preserving, notwithstanding, distinctness of form and outline."

We descended at the village of Cryston; Robert Kaye, Esq., of Mill Brae, was present, rendering material assistance, and invited us to take refreshment at his house.

In a third trip from Glasgow, in which Mr. Maxwell again accompanied me, Duncan McIntyre was initated into the enjoyments of ballooning; a few extracts of his own version of the scene will sufficiently bring it within view.

"After having witnessed the ascents made by Mr. H. Coxwell on the 9th and 13th of October, I had no hesitation in making arrangements for a trip with him on the 18th instant.

"Almost immediately on leaving, the aëronaut commenced a most entertaining lecture on aërostation, and described graphically, the beautiful scene which gradually opened out to our view.

"The tortuous winding of the Clutha, appeared like a small rivulet, dotted here and there with Liliputian steamers. Dumbarton with its ship-building yards and ancient Castle-Greenock, in the distance, with its forest of shipping, were all seen to great advantage, although on the same dwarfish scale. On ascending still higher, the country, to my in-

experienced eye, assumed a somewhat concave appearance, reminding me of the plains of South America, and for miles there was not apparently an eminence of a foot high; but this deceitful appearance was fully explained by our enterprising captain, who pointed out many places and informed us of their height.

"Near to Garscube bridge, Mr. Maxwell left the car, as we wished to go much higher than we had been, and this time the captain took a variety of observations with his instruments, by which he told me of the degrees of cold, and our height in feet, a few of which I put down in my pocket book; for instance, just before we entered a cloud, though I had not observed it overhead, I was requested to button up my coat, as the thermometer had fallen fourteen degrees, and we were three quarters of a mile high, and in another minute we should enter a cloud, and there it would be ten degrees colder still. I remember he said we were then more than a mile high.

"Our descent was made in a masterly style about half a mile west of Milngaire. It is worthy of remark that this is the same field in which Mr. Sadler, twenty-nine years ago, made his descent, and still more remarkable, it was the same man who caught the rope of Mr. Sadler's balloon, who performed a similar service for us."

After the three ascents already recorded, I made one more in conclusion, and it is no vain exaggeration to assert, that my first season in London, besides my numerous ascents previously as an amateur, did actually comprise a greater number of trips than any three balloonists had made, even in the preceding exhibition year.

1853.

During the summer months I maintained the interest in aërostatics by numerous voyages, and although they did not exceed twenty-two in number, still they furnished fresh experiences, and enabled me to take up more than fifty passengers.

One of the most remarkable was an ascent from the New Globe Pleasure Grounds, Mile End Road. The date fixed for the fête was October 16th, but it was a wet and windy morning, which caused postponement notices to be got out, but no sooner were they delivered into the hands of the bill-sticker and his assistants, than a gleam of sunshine shot forth, and the drift of the clouds betokened a favourable break, while a low, but steady, barometer, together with a slight shift in the wind, induced all parties interested to suspend movements until a consultation had been held, as to what was to be the order of the day. The workmen were at their posts ready to proceed, the foreman of the gas works was awaiting the word to turn on. My own assistant stood by the balloon, anxious to unfold at a moment's notice.

In the Board Room were myself, the gas engineer, and the proprietor of the gardens in earnest discussion, as to whether or not it was too late to fill the balloon. Extra pressure was promised, and a little pressure of another sort was put on me, so that the decision was to proceed.

Biscuits and a hasty glass of sherry were served, when out we all sallied into the grounds, which were now steaming from the rarefaction caused by the sun, which

had burst forth with an unmistakable intention of shining uninterruptedly until sunset.

I having raised my hand to go on, the "Sylph" was brought forth, the tube was connected with all available speed, and in less than an hour we presented a bold aspect; it quickly buzzed abroad that the balloon was filling, and that, despite rain and wind, the ascent would be made. The bills, of course, were not posted.

When six o'clock struck, and several watches were examined, numerous were the shakes of the heads as to the state of the balloon; it was not more than half full, and as it rolled and flopped about in the high wind, everyone saw that it was not in a fit state to ascend, and less still, to offer a compact resistance to the freshening gusts. Another half hour's flow turned the tide in its favour, and produced the required ascending power, but there was nothing to spare, and when I let go the last connecting cord, a violent puff of wind caught the balloon sideways, driving it rather down than up, and although two bags of sand were discharged, it still dashed along at a frightful pace, when every beholder saw that a stack of chimnies and the car must inevitably clash; and so they did—but I had thrown myself into position just previous to the moment of contact, and, although the bricks and mortar were hurled downwards, the "Sylph" shot clear away and mounted gaily to an immense elevation, so that by the time I was over the Houses of Parliament, the wind being east, I found my barometer had fallen five inches, and that temperature had decreased just nineteen degrees, by which I knew that I should continue an upward movement for at

least another six thousand feet, owing to the space left for expansion, unless I confined the balloon to the same level by the use of the valve. As I had no object in going very high, I attempted with the cord a slight check, but neither the customary pull nor an extra tug would open the valve. It then struck me that in the hurry of making a beginning my assistant had allowed a fold to form itself in the silk, which prevented the valve-shutters from opening, on looking up through the neck internally, I observed that this was the case, so I determined to allow the balloon to rise and come down without any interference on my part, but in so doing I had to go nearly as far as Basingstoke, before a downward inclination took place.

Soon after the first dip, I noticed a splendid meteor, which was below the level of the car, and apparently about six hundred feet distant—it was blue and yellow, moving rapidly in a north-easterly direction and became extinguished without noise or sparks.

It is just possible that the apparent closeness of this meteor was illusory, and that the real distance was very many miles; its size was half that of the moon, and I could not but feel that if such another visitor were to cross my path, the end of the "Sylph" and its master would be at hand.

The range of temperature was 35°, it being 54° at starting, and 19° at the greatest elevation, viz, two and a half miles.

The car touched the earth soon after 8 o'clock, but it was dark, and no signs of habitation were at hand; I shouted lustily to see if any labourers were within hail, but no one

appeared to hear me, or see the balloon. Being quite out of my latitude and longitude, I was naturally curious to ascertain my whereabouts.

I resolved upon a last effort, and having charged my lungs fully I cried out "Air balloon," some half-dozen times, but getting no encouragement by a response I made up my mind to settle down in the car, and do the best I could to procure rest.

But there were matters requiring immediate attention and of greater importance than sleep, the first was the reduction of the "Sylph" in point of bulk; now it is not exactly an easy matter to get all the gas out of a balloon single-handed; when the valve drops to the ground the gas will not escape unless it is pressed out by men holding down the network, and, as I had no such assistance, I got thus far and no farther; the wind, however, had abated, so that my silken companion presented very much the appearance of a whale.

I drew some part of the loose folds over the car, and then remembered the kind attention of Mr. Gardner, the lessee of the Gardens, who always made up for me something to comfort the inner man before I ascended. This time there was a beef sandwich with a liberal supply of mustard and pepper, but it was not too hot, nor was the pocket pistol, containing brown brandy and water, at all dangerous, for it was rather needed, the cold weather aloft having chilled one somewhat; whilst good Mr. Gardner's basket, and its truly acceptable contents, produced a glow of gratitude which prompted me, the moment I had unscrewed the flask, to drink to his long life and happiness.

I did so twice, and after having taxed the reserve sandwich I felt myself a fresher and more thoughtful man.

The next question was, whether it would be well to turn in where I was for the night, or strike out by the nearest road for assistance.

There would be no harm, I thought, in taking a short reconnoitre as far as the boundaries of the field I was in possession of; it being dark, I could only by close inspection ascertain how the ground lay.

At the further extremity I came upon a gate and a bye lane; now if I pursued this, wouldn't it lead to a farm house? And if I placed a stone, or, as I did, a chalk and flint opposite the gate in the centre of the lane, shouldn't I be able to see it on my return?

The argument was conclusive, I struck out in a sanguine spirit, and after a quarter of an hour's cautious walking came to a farm with a light in one window; bravo! there was a yard wall surrounding the premises, but the stile was visible, and I mounted step after step, determined to knock or ring them up.

But gracious goodness! what dark object was that springing at my throat with a fierce growl?

A bounding, unchained, Newfoundland dog had never entered my dreams.

I confess to being both surprised and alarmed, and to having beat, or attempted to do so, one of the most expeditious retreats on record. If recollection serves me correctly I fairly bolted, but whether I stopped before the flint stone tripped me up or not I cannot say.

Halting at the outside of the gate, and seizing the big

flint in my right hand, I breathed more freely, and was not displeased when I ascertained that I had no followers.

Having satisfied myself that the balloon was more quiet than the hound, discretion preached an out-door discourse as to being the better part of valour, and I assented by making up my mind to experimentalise with sleep. A ballast bag or two were now filled with hedge-row gatherings to be used as pillows.

I stretched myself nearly at full length in the car and went earnestly in for a doze. I believe, too, that the first stage of it was duly entered upon, when voices in the distance were indistinctly heard through the wicker-work.

I sprang up, casting aside the curtains of oiled silk, and listened attentively. Yes, there were men in the next field, they had doubtless seen and followed the balloon; to welcome them would be most expedient.

"Hallo there! here I am and the balloon as well."

No sooner had I delivered this piece of information than I heard a voice say, "Hush!" Receding footsteps in an irregular stampede followed, and I was left in wonderment as to what it all meant.

I came to the conclusion that a gang of poachers were in the neighbourhood, and that I had disturbed their operations at the very outset.

After shouting again and again, I heard no more of the strange voices or footsteps; I determined upon again sallying forth, but this time in the opposite direction, when I armed myself with the liberating iron, a powerful weapon, and, if used dexterously, far more to be dreaded than a policeman's truncheon.

Having again deposited another white stone in the lane opposite the gate, I walked for at least a mile, when I came to a village green having a pond at one side and cottages in the distance.

It had struck eleven o'clock when I heard some men approaching, and although they were not exactly steady still I was glad to meet with anyone for information's sake, and for assistance in the packing up.

"Here my man, be good enough to inform me what place this is, I am a stranger and require assistance."

"But you surely know where you are?"

"No, the fact is I've just popped down here in a balloon, and I require help."

"Oh, that's it; well, if you go to the 'Red Lion' down the street I daresay you'll get what you want; the landlord is a retired fighting man, and he'll put you to rights in no time."

While I was in the act of laughing, my suspicious adviser moved off in an evident state of doubt and alarm, so I pressed forward down the street, and was glad to hear the measured steps of a policeman.

As he appeared I thus accosted him:—

"Officer, I am glad to have met you, being a stranger and not knowing what *county* I am in. I have just ——."

The bull's eye was immediately turned, and my liberating iron scanned, when the policeman backed a step or two and said, "Oh, you don't know what county you're in, don't ye. Well, I should think you know the county gaol pretty well."

Whether it was the provoking way in which I burst out

laughing, or my close resemblance to some criminal character, I cannot say, but the officer drew himself together as if he were about to encounter a robber, and before I could speak with becoming gravity he held up his lantern and assured me that if I did not immediately move off out of the village he should take me to the station house.

"That's just where I am going either with or without you as an escort," I said; "but mind what you are about officer, the fact is, I have descended in a balloon not far from here this evening, and I have come for assistance. Which, pray, is the 'Red Lion'?"

"I thought," rejoined the policeman, "You didn't know what county you were in; we had quite enough of you fellows a fortnight ago, and if you hang about here I shall take you into custody."

"Do so at your peril," I cried, holding up my iron defiantly.

The officer continued his beat as if he were perplexed as to my business in that part of the country; I observed that he kept his eye upon me, and turned round occasionally as he went up the street.

I failed to obtain an entrance into the "Red Lion," nor did I see anyone to ask where the station house was, and as the persons met with appeared semi-savages, I became anxious about the balloon, and decided upon going back and having a parting word with the policeman.

That official, however, was not to be seen, he had either gone further on the road, or he was watching me from some unseen place.

On recognizing the stone, and regaining the field, sleep was once more sought, and this time successfully.

I did not awake until voices were faintly heard in the morning.

I then peeped from my cage, and found that farm labourers were going to work.

Feeling assured that they would pass the gate, notice the stone, and then the balloon, I remained quiet, but could clearly discern the men as they came to a dead halt, as if paralyzed with astonishment at the strange appearance in the field.

"What be that Jim?" said the foremost man with one leg raised on the gate.

"Dang'd if I know," said another, "either the owld'un or sum'mut alive."

"Let's over and see lads."

As the men approached the balloon their cautious movements and general expression betokened fear.

When they first reached the car, I threw aside my covering, anxious to convince them without further doubt, what it was they were gazing upon.

Whether or not I was too energetic, and sprang up like Jack in the box, I cannot say, but the moment their eyes rested upon me they fled in dismay.

I followed after them, urging that "it was only a balloon," but the affrighted ones jumped through a hedge-gap, and it was not until they had drawn up on the other side, as if ashamed of their fear, that they listened to what I had to say, and on regaining self-possession they went back and examined for themselves; after getting

reassured they conducted me to their master, who invited me to breakfast.

While we were finishing our coffee, the farmer continually apologized for the rude behaviour of his men, who were not at all polite.

Master Hector, the dog, kept eying and pawing me as if he would be rough, but for the presence of the farmer.

After breakfast we drove over to Basingstoke, and called at the "Red Lion" on our road to the railway station.

The landlord had heard a knocking the previous night, and had been warned by the policeman of a dangerous-looking fellow being about, with a house-breaker's implement in his possession ready for use.

I showed him the liberating iron and explained its application, and who I was, &c., when the ex-pugilist was much amused, and informed me why the villagers were so cautious about strangers

A fortnight previously, I learnt, several of the shops had been robbed by a gang of London thieves, and most of them, as well as the police, were apprehensive of a second visitation.

"Another thing," said the burly landlord, "You must please not forget that you have come among the Hampshire hogs, and that a grunt or two is all in character."

On putting me down at the railway station the farmer expressed his regret that he had not heard my call when I descended, and that the persons I sought information from were so unfriendly.

I told him that I had frequently met with almost similar

receptions, and that the treatment I had received was owing to the balloon not having been seen in the air.

* * * * * *

As the story of my life represents thoughts and acts in childhood, youth, and early experience, I have now to account for a break in the narrative, which must leave off while barely touching the year 1853. As there yet remains five and thirty years of my career to describe it follows that I cannot do so in the present volume, which, to be candid, owes its appearance to a circumstance which requires mentioning.

I had supplied my publishers with an article on Military Ballooning for one of their magazines. This led to the question whether or not the matter would lend itself to expansion for a small book, and as Military and Meteorological Ballooning had revived in Paris, I expressed myself ready to allude to the current topics of the day, and further stated that I had written part of my life. It was then decided to connect the two; but there is this striking contrast between the narrative and the more matured remarks which are added, viz, that the former gives faithfully the buoyant allusions to my early ascents in a gossiping, anecdotal strain, whereas the following chapters are the more matured opinions of later years.

I have noticed hitherto that ballooning best commends itself to general readers when amusement is blended with instruction, and especially if the scientific and practical part is introduced incidentally, so as to avoid abstruse treatment and long calculations.

I must ask the reader's indulgence to recollect that the

writer was born in 1819 (I ought perhaps, with becoming loyalty, to add that considering this is the era of Her Majesty's Jubilee, I had the *honour* of being born in that year). An apology is perhaps therefore due for a mixed composition, and for the writer's boyish views in the earlier part, although it may not be unreasonably presumed that as I have seen some service in trying to advance Aëronautic Science and Military Ballooning, the latter remarks may have more value.

I may add that in a succeeding Volume my autobiography will be continued and concluded.

THE BEGINNING OF

MILITARY BALLOONING.

MANY articles have appeared on this subject, but they are mostly concise compilations as to the dates of the employment of war balloons, and there is yet wanting a more simple and systematic arrangement of the order and particulars under which the respective balloons figured in early aëronautic history.

I have endeavoured to supply these requirements and to add a few practical and critical observations as to the merits and faults of the various equipments and plans from an aëronautic standpoint; as this kind of treatment may interest military aëronauts, and assist civilians who are studying the matter, and it may also prove more attractive to general readers who like to know what professional men have to say (in friendly rivalry) as to the ideas of naval and military officers, who have devoted attention to ballooning.

On the other hand military men, the young especially, who are apt to conclude that veterans know very little compared with modern tactitians, may find that in this speciality they are somewhat mistaken, and that ballooning is not to be "picked up," so to speak, without having a

regular and legitimate schooling in an art which so very few understand.

> "One science only will one genius fit,
> So vast is art, so narrow human wit."

The inventive genius of the French may be traced no less than their intrepidity in their early efforts to apply the balloon to purposes of warfare.

In the year 1793, a scientific committee was formed in Paris with this object, when it was suggested that balloons should be used both for attack and defence, and for ascertaining the movement of armies in the field, and to get at the strength of fortified places.

Here was a clear and comprehensive plan for a new departure in military science which the leading nations of Europe have been slow in imitating.

A great deal of doubt and ridicule have been cast upon those (myself included), who, in different countries had the courage of their convictions to urge such a movement upon the attention of those in power.

Austria, whose forces first faced a war balloon at the battle of Fleurus, directed her government not to neglect a bird's-eye view of the enemy.

Russia took up the idea pretty early.

Italy followed suit.

Germany was slow to move in the air, but has been steady and scientific in carrying out her projects.

Old England, proverbially averse to new fangled notions, resisted all overtures even from an experienced aëronaut for many years, pooh-poohing this kind of feather-brained mode of strategy as at that period imagined.

At last, after experiments had been made by Colonel Beaumont and myself at Aldershot and Woolwich, a balloon corps was formed and permitted to try their hand with calico balloons.

This new force, however, ignoring the first instructors most persistently, ventured to teach the British army without recognized balloonists to aid them; but one day, in an unfortunate hour, a war balloon, while taking a preliminary canter, not, of course, in an official capacity, dashed off on a dark December evening to sea, with an enterprising and much lamented member of Parliament, who knew no fear, but had a poor chance of being rescued from a watery grave.

Then, after this calamity, the British balloon force languished, but not for long, as war clouds were to be seen in the East, where military balloons should have been sent, particularly to Alexandria, but they were not, nor to other places in which Lord Wolseley has himself admitted that they might have proved very useful.

Our own progress at home and the activity displayed on the continent form an instructive contrast, but if we want to ascertain and compare the present with the past we must go back to the year 1793, and follow on chronologically.

The Committee of Public Safety (an excellent kind of committee for London adoption) gave their approval on condition that the gas should be prepared without using sulphuric acid, as sulphur could ill be spared on account of its being so much needed for the production of gunpowder.

Guyton de Morveau showed that water could be decomposed by being forced over red hot metal and

borings in a retort, the oxygen being thus separated from the hydrogen which was alone required for an inflation.

Experiments at Meudon were instituted under the direction of Guyton de Morveau, Coutelle, and Conté. Their report led to the formation of a company to be named the *Aërostiers*, who boasted a captain, a sergeant-major, one sergeant, two corporals, and twenty men.

Coutelle was captain, and the aërostiers went to Meudon to be practised in the aëronautic art. After the preliminary experiments Coutelle was sent off to General Jourdan at Maubeuge with material for the inflation, but he arrived at the moment when General Chasal was under arrest for being involved in a plot to deliver the place to the enemy. Jourdan threatened to shoot him as a spy, but he softened down, as De Fonvielle relates, when he saw that Coutelle was not in the least disconcerted, and ended by congratulating him on his zeal in the defence of his country.

The balloon corps contained in its ranks, as indeed some of the modern associations do, some rather singular individuals. We are told in "Adventures in the Air" of a priest of Montmorency, whom the Reign of Terror had driven to take refuge in the camp, but who only waited the advent of more peaceable times to resume his cassock.

We may also mention Selles de Beauchamp, who entered the corps under the name of Cavalier Albert, and who rose to the rank of officer, and left interesting memoirs on the experiences of military balloonists.

The father of Beauchamp, an officer in one of the royal regiments, was seriously wounded in Piedmont, where two of his brothers were killed; he retired, moreover, and died

in 1781, leaving a child six years old, who, two years later, lost his mother also. As an orphan of fortune, as soon as he was old enough, he was sent to the Harcourt College, where he was treated as a youth of quality.

His tutor adopted zealously the revolutionary cause, while Beauchamp stuck to the Court party. The latter, in attempting to leave the country, was arrested and sent to the army of the Loire, but rather than join it he engaged among the military balloonists, of whose life, but for him, we should have known nothing, for the memoirs of Coutelle, though very valuable from a scientific point of view, are too laconic, and enter into no details.

To these various characters Coutelle added a certain number of mechanics, whose services were indispensable. His first lieutenant, Delaunay, was formerly a master mason, and proved useful in the construction of furnaces, for it required no less than 12,000 bricks to build the furnace for the manufacture of gas.

The process of inflation lasted from thirty-six to forty hours. I may here call attention to the decided improvement which appears to have been made in the generation and storage of hydrogen gas for the English balloon force. Compressed gas is now supplied at Chatham in metal receivers, which can be sent abroad, as it was to Suakim. This plan has its advantages and difficulties. It must be very expensive, and the weight of the cylinders is an objection where every ounce of impedimenta has to be sometimes thought of.

The French balloons were made of silk, and so efficiently varnished that they retained the gas for two to three months.

In this important element we are behind the French, as mere calico was the first fabric used in the construction of the Woolwich balloons, and though professional aëronauts for public ascents may sometimes resort to cotton balloons, still for military objects, silk, although the most costly, is, I should say, the lightest, strongest, tightest, and best.

We must allow for considerable exaggeration in the much vaunted holding powers of the original French balloons, and, for the matter of that, for the latest productions as well, both in England and on the continent. I must include the Channel balloonists.

It is all very well to talk and write about such a volatile substance as hydrogen, or even coal gas, remaining good for three months or a month. Aëronants deny it.

Will a volume of tho lightest known fluid be fit for much after being a fortnight or even a week in either a silk, skin, or so called india-rubber envelopes.

Until ballooning is divested of much that is absurd, untruthful, and misleading, real progress will be slow.

The balloon "Entreprenant" which was sent to the army of the north was only twenty-seven feet in diameter, and its lifting power was 500 pounds. It was held fast by two ropes which were attached to some extra network at the equator; but considering that in those days the network did not cover much more than half of the balloon, we should not fail to notice that at present balloons are enveloped in much more extensive and elongated nets which protect the lower hemisphere, and prevent the escape of the balloon unless the network gives way. It is

generally made of thicker cord below, so that this danger is more guarded against than it was in the year 1794.

The army of the Meuse-Sambre had the "Celeste" balloon, while the "Hercule" and "Intrepide" were sent to the Rhine-Moselle.

The recent Naval Jubilee Review reminds one how interesting it would be could the aërial fleet of the last century be inspected by the side of the latest style of war balloons that England has produced.

I am not at all sure that comparisons would be in our favour. Fancy the British army under an amateur!

On June 18th, when Coutelle reconnoitred the Austrian position, the enemy fired at his balloon as it was ascending and descending.

From Maubeuge it was taken to Charleroi, floating at such a height as to permit cavalry and other troops to pass beneath.

At the battle of Fleurus, in Belgium, on June 26th, 1794, two ascents were made, each of about four or five hours, notwithstanding a strong wind; the success of the French was said to be generally due to observations from this balloon, as all movements were reported.

The balloonists were again brought into requisition in the campaign of 1795. The "Entreprenant" withstood an amount of buffeting which would shatter a modern balloon to shreds; we are reminded of this by a high French authority, and I am not prepared to dispute this bold assertion, when we remember of what material some of the latest war balloons are composed.

The strain on Coutelle's balloon was lessened by

attaching the cable to horses and men, rather than to fixed objects.

Of course it was; there are secrets in every art, and I may here mention a case in point as to the danger of a too rigid holdfast, which happened to my large balloon, which I made at my own cost for The British Association Experiments, in the year 1862.

While the committee at Wolverhampton, which included Professor Tyndall, Lord Wrottesley, Dr. Lee, Mr. Glaisher, and others, were watching the inflation during a high wind, I left the grounds for a short time, the balloon being in charge of my assistants, who were manœuvring at the nozzle of the lower opening, as that is a part requiring much care, and will not admit, without great risk, of being held too fast; the late Colonel Sykes, M.P., considered that if a crow-bar were driven in the ground, and the cord were attached, it would prevent the men from being rolled over occasionally, and his idea was put to the test.

I was surprised to observe from a distance, that the balloon had been badly torn, and could not account for it until I returned and saw that the neck valve had been pulled completely away. Had it been kept as I left it, with a give and take movement to obviate a sudden snatch, the balloon would have escaped injury.

It is really astonishing how the same ideas occur to all amateurs and novices. Those who read much about aërostatics must have noticed that a strong resemblance in these notions is constantly to be observed; they one and all begin with the valve and have ever since I can

remember. Green's and Coxwell's notions are pronounced old fashioned and exploded.

They all want to try india-rubber and other complicated springs instead of the rat-trap principle, which is so very simple, and cannot well fail to act in all weathers, whereas india-rubber will relax in heat, and beadings and other additions will swell and contract in the framework, if of wood, according to atmospheric changes; but the plan, which experienced aëronauts know to be the safest, is almost sure to be cast aside until an accident, as I have already pointed out, induces beginners to fall back upon the approved plan.

Then again, the varnishes are wrong, Mr. A. or Mr. M. has a varnish which is perfectly impermeable, the old stories and new pretensions are reiterated, while the old stager knows very well that there are objections to most of the new fancies, and that the colours and oils he has used are like those of the old masters in painting, not so easily to be surpassed, particularly in the present day, when most pigments are so impure and adulterated.

Thirdly, the grapnels are all wrong, but if the ropes and balloon equipments of early days were to be put side by side with many of the accessories of modern appliances, I believe the balance would be in favour of the experts of the last generation.

In 1796, the "Intrepide" was sent to the army of the Danube; a fifth balloon was prepared for the army of Italy, but for some reason it was never sent out.

In the year 1798, Napoleon took a balloon equipment to Egypt, but unfortunately for the French, the English

managed to capture the ship which contained the apparatus.

After this, the aërostiers seem to have gradually died ont of notice, and the balloons were sold in 1804.

It was said that the dissolntion of the corps was due more immediately to the displeasnre of Napoleon at the performance of a balloon which ascended at his coronation, with a large crown snspended beneath it, which travelled all the way to Rome, and deposited part of the crown on the tomb of Nero.

MILITARY BALLOONING DURING THIS CENTURY.

After the Peace of Amiens was concluded in March 1802, military aëronants were less heard of, while professional and scientific air explorers came more prominently into notice.

In 1812, the Russians constructed a hnge balloon at Moscow, which was to hover over the French army and rain forth shells and explosives, bnt their expectations rose higher than their balloons, which refused to move off the ground.

The French soldiers fonnd this in the Castle of Voronzoff bearing many thonsand ponnds of gnnpowder, which were to have been launched upon them.

General Count Philip de Segur says:—"This prodigious balloon was constructed by command of Alexander, not far from Moscow, nnder the direction of a German artificer."

In 1815 a balloon reconnaissance was made at Antwerp, and in 1826 the snbject was again mooted by the French, and a balloon was sent to Algiers, but it was never disembarked.

The Russians are said to have tried experiments at Sebastopol in 1854.

The French again used balloons in the Italian campaign of 1859; they employed the civilian aëronaut Godard, and a useful ascent was made the day before Solferino in a fire balloon.

When the Civil War in America broke out several balloons were used in the operations. On October 4th, 1861, an aëronaut named La Montaine ascended from McClellan's camp on the Potomac; he was enabled to make observation of their position and movements, and afterwards returned to his own lines and communicated results which were declared to be of the utmost importance.

Later on the Federals instituted a regular balloon corps, of which Colonel Beaumont, R.E., wrote an interesting account in the Royal Engineer Papers. The balloons were of two sizes, one of 13,000 cubic feet capacity, the other double that size, but the large size was found most suitable, a fact which our military balloonists should not overlook in their desire to possess very light and small balloons for easy transport.

The American balloons were made of the best silk, the upper part being composed of three or four thicknesses; this was capable of retaining sufficient gas for an ascent a fortnight after inflation, a statement which can more readily be credited than the French accounts about preserving it for *three months*.

Hydrogen was used for inflation, and generated in the old-fashioned way with scrap iron and sulphuric acid.

In this chapter of facts and dates I have drawn freely on

the exhaustive work called "*Astra Castra*," by Lieutenant Hatton Turnor, formerly of the 60th Rifles; also from the indefatigable gleanings and able lecture by Lieutenant Baden-Powell of the Scots Guards.

De Fonvielle's "Adventures in the Air" have furnished valuable information and incidents worth mentioning; Lieutenant Baden-Powell has so cleverly compressed his matter that for the sake of brevity I am induced at times to quote literally.

Two of the American balloons and two generators were taken each on a four horsed waggon, with one two horsed acid cart.

Earthworks could be distinguished at a distance of five miles, while the piquets and supports of the enemy were distinctly seen. A telegraphic wire was sometimes attached to the balloon, so that the aëronaut could at once communicate with the general, or even, as was done one time, to the Government at Washington. Some photographs were also taken of the enemy's position.

The aëronaut and the general each had maps similarly divided into small squares, which were numbered, whereby the communications were simplified.

The "Times" correspondent said of the battle of Chickahominy: "During the whole of the engagement, Professor Lowe's balloon hovered over the Federal lines at an altitude of 2,000 feet, and maintained successful telegraphic communication with General McClellan's head-quarters."

In an attack on Mississippi Island, No. 10, Engineer Aëronaut Allan, ascended and directed the artillery fire, communicating the effect of each shot.

In July 1862, the first military balloon experiments in England took place at Aldershot, and, as I had the honour of accomplishing them, I will leave Lieut. Baden-Powell to allude to the events in his own words.

"The aëronaut, Mr. Coxwell, was employed to bring one of his balloons which was filled at the gas works, and made several captive ascents, the highest being 2,200 feet. Colonel Beaumont said that no large movement of troops could take place within a radius of ten miles without being seen. Later on, more experiments were made, a one-inch rope being used as cable.

"When the war between France and Germany broke out, Mr. Coxwell went to manage some war balloons for the Germans. He formed two companies (two officers and forty-two men) at Cologne, and his assistant went on to Strasbourg, but that town capitulated before much service was rendered."

During the siege of Paris, balloons, it will be remembered, were made use of in a more regular and extensive manner, and with most important results.

At first, two old balloons were anchored at Montmartre and Montsouris, as observatories, to watch the Prussians. They apparently accomplished but little, although one or two new ideas were introduced. The messages from the balloons were put in a little box which was attached to the cable by a ring, so that the observations were delivered straight to those who held the rope.

Every twenty-four hours, six ascents were made, four by day, and two by night, the latter to observe the camp fires, etc., and it was proposed to use a search electric light.

When the Parisians found themselves cut off from all communication with the outer world, balloons were naturally suggested as a means of escape.

Several experienced aëronauts were in Paris as well as a few balloons.

The first aëronaut, Duruof, left in a leaky machine, which owing to its imperfect condition, was sent up like a projectile, as we are informed by De Fonvielle. It described a parabola like that of a bombshell, and by sacrificing seven hundredweight of ballast, the descent took place nineteen miles from the Place St. Pierre, in the department of Eure, not far from the Prussians, but still beyond their range.

The "Ville de Florence" took, by way of trial, the first pigeons intended for return with despatches. Paris learned, with as much satisfaction as if it had been a victory, the return of the first aërial messenger.

Louis Godard had two small balloons, neither sufficient for the purpose of escape, but he fixed one below the other, and made a very successful voyage in the "Etats-Unis."

The last ready made balloon was the "Céleste," which was the first to take post cards.

The Government then ordered a number of new balloons to be at once constructed, they were turned out at the chief railway stations, which for the time being were no longer used as such.

The balloons were made of strong cambric, oiled, and of about 70,000 cubic feet capacity; they were filled with coal gas, and could carry a load of 2,000 pounds, including 600 pounds of ballast and 1,000 pounds of despatches.

The first of these bore Gambetta, he was accompanied

by his intimate friend, M. Spuller. The political results of this voyage are well known.

One balloon travelled to Norway. Many were fired at, but few injured. Three balloons fell into the hands of the enemy near Paris, and two in Germany. Two were lost at sea, each manned by a sailor.

The average distance travelled, was about 180 miles, and the speed varied from seven to fifty miles an hour, and in one instance, eighty miles.

During four months, sixty-six balloons left Paris, of which fifty-four were specially made by the administration of posts and telegraphs.

One hundred-and-sixty persons were carried over the Prussian lines.

Nine tons of despatches, or 3,000,000 letters were successfully conveyed to their destinations. 360 pigeons were taken up, of which, however, only fifty-seven returned to Paris, these conveyed, as Lieut. Baden-Powell reminds us, 100,000 messages.

Wilfrid de Fonvielle gives us a vivid and thrilling account of how he left Paris in a balloon.

The members of the scientific commission, he informs us, conceived the idea of sending off balloons by night. He took his departure on the 20th of November; he was apprehensive, owing to the weather, of some crushing catastrophe.

"The 'Egalité' began to show its graceful form and bright colours. The sun was shining on the golden sphere, which the wind was gracefully oscillating. I was looking on the clouds, which had a direction inclining

somewhere towards Prussian soil, when I heard people shouting.

"A large hole had been made by the copper end of the pipe in the graceful fabric. It was too late to think of mending it, and of ascending afterwards before sunset."

On the following morning the weather was horrid, After many delays, owing to this cause, De Fonvielle and his companions started. They saw desolated fields, disappearing one after another. He recognized different parts where he had wandered during so many happy years. Twice the Seine was crossed, that noble Seine! where German horses will never drink! and he could see distinctly where his old balloon had been taken by German hands.

He was looking at that spot when the first shot was heard, but the balloon was more than 5,000 feet high. In less than two hours they reached Louvain.

A few days after this successful journey, another nocturnal balloon went up on a moonless night. A brave sailor, named Prince, was the sole occupant of the car.

Next day, at dawn, some fishermen on the north coast of Scotland, saw a globe disappear towards the west and sink in the ocean. A poor mother and two sisters bewailed the loss of the unfortunate waif.

In June 1871, the English Government appointed a committee, consisting of Colonel Beaumont, R.E., Lieut. Grover, R.E., and Sir F. Abel, to enquire into the use of balloons for warfare, and as Lieut. Baden-Powell, in his lecture at the Royal United Service Institution, went

into the dates and progress made in military ballooning, I shall regard him as a reliable authority in these matters.

In April 1879, the English Government instituted an official balloon committee, consisting of Colonel Noble, R.E., Sir F. Abel, and Captain Lee, R.E., with whom was associated Captain Elsdale, R.E., and Captain Templer, of the Middlesex Militia, the last mentioned having had considerable experience in ballooning.

Experiments were conducted at Woolwich, and four balloons were made by the Royal Engineers of specially woven fine *calico*, varnished.

A portable furnace and boiler for the manufacture of hydrogen gas was devised similiar in principle to the one used by the French in 1793, *but the apparatus did not prove satisfactory.*

And who could expect that a mere imitation after the lapse of eighty-six years, would do much good or credit to the British army. Had a competent man been appointed consulting aëronaut, he would have pointed out that the use of bricks, tiles, and red hot turnings, was resorted to in France as a necessity when sulphur and sulphuric acid were scarce, but as none of the above named officers had ever ascended with me, or had my instructions, I could only note, with regret, what appeared to be a useless expenditure of money and time, and as to proper and suitable material, I had in my store rooms at Seaford, Sussex, a large quantity of stout, pure silk, made expressly for balloons, and could have turned out for Government, a typical war balloon, which would have been creditable

to our country, and been in every way preferable to *calico*.

A few days after the first experiment, an unforeseen adventure happened as one of the war balloons was being towed, attached to a cart.

The cable snapped and the balloon disappeared in the clouds!

In October, one of the balloons was tried free at a review on Woolwich Common, but the wind was unfavourable.

The next year, the "Crusader" figured at the Brighton volunteer review, successfully.

In September 1880, a whole company of Engineers (the 24th) went for instruction in ballooning to Aldershot, and many experiments were made.

English military ballooning, as I have pointed out received a sudden check when the "Saladin" was lost in the year 1881.

If we turn to the French, we read quite a different story. They established, in 1872, another aëronautical school. An annual grant of £10,000 was made, since then, the establishment has increased.

Their balloons are spherical, ten metres in diameter, made of the best silk, and covered with a varnish which renders them so gas-tight, that they can remain inflated for a month. So they assert.

Twenty out of forty balloons had already been made.

For captive ascents a kite screen is used. I suggested something of this kind twenty-six years since, but I have now a more simple and safer plan, with others for signalling etc., should they ever be enquired after or wanted.

AIR TORPEDOES AND BOMBSHELLS.

If there is one branch of modern strategy which is likely to be watched with keen interest during the next Continental war it will be that of military ballooning. For some time we have heard of such wonderful preparations in this line on the other side of the Channel that the public, both at home and abroad, will be moved by anxious expectancy to take note whether the steering gas bags and air torpedoes revolutionize warfare by developing a more easy way of striking hostile forces, namely, from a vertical position, in which they are so frequently vulnerable. The aims of those who would merely employ balloons to see what is going on behind the hills, and how their opponents are disposed, seem insufficient to satisfy the ambition of foreign engineers. A Frenchman has supplied the Russians with an air torpedo that can be directed, so we are told, with the accuracy of a submarine machine. It is to take up eight hundredweight of dynamite, which can be discharged on the heads, and on the magazines and fortresses of their foes, so as to make short work with them by blowing them up sky-high without subjecting the attacking party to risk, owing to the remarkable guiding power of their aërial cruiser, which is to strike and glide away with marvellous rapidity, either as it emerges from the clouds, or springs unseen above the smoke of battle, to let fall its destructive cargo when least expected. All this sounds very terrific and smart in theory, but the question is, can it be done with the tact and certainty which we are asked to believe? From an aërostatic standpoint such an enterprise would

entirely depend upon aërial navigation having been solved. Certain inventors avow, and perhaps imagine, that this consummation has been settled already by those preliminary canters near Paris of which we heard so much two years since. Now, it is not for me, or any other practical man, to say that the pretensions put forth for "the conquest of the air" are visionary; but this I do say, that the alleged movements of the cigar-shaped balloons have not warranted us in concluding that the art of steering and propelling has been satisfactorily mastered. Had it been otherwise, how is it that so magnificent an achievement has not been forthwith applied to the more noble and remunerative arts of peace and commerce, instead of being shelved for the horrors of war? The moment air ships can be directed, the probability is they will be seized upon immediately to bring about results far more creditable than the annihilation of our fellow creatures.

Secondly. A bombardment from above might, and possibly would, involve a contest in the air. If these agents are available for attack they may be constructed for defensive objects, for retaliation, and for reprisals. One may swoop down like a hawk, but another may rise up like a rocket and bring down its adversary like the stick. And how about the latest arms of precision, chain-shot, and shrapnel? A gas-inflated observatory can often be kept well in the rear in a more secure captive state, but if these flying torpedoes are going in for close quarters, as they must to "spot" their victims, the hazards will be so great that pressed men, rather than volunteers, will have to be forced into the empyrean; and, so far as my experience

goes among officers, soldiers, and civilians, I never yet noticed any exuberant bellicose tendency, or display of pugnacity, while exploring in mid-air.

I once took up a gentleman who was said to be very daring, and among his accomplishments was a proficiency with the gloves; a friend of his who was with us thought fit in a moment of pardonable elation to indulge in playful sparring with the reputed amateur boxer. I was rather surprised to notice that he evinced an apparent distaste, and even incompetency, for this sort of thing when aloft. It certainly might have been that the narrow confines of a wicker basket were not sufficiently capacious for manœuvring, or that a passing nervousness took all the fight out of him. He protested against his friend's familiarity, while casting an appealing glance at me. "Recollect," he cried, "where we are;" but on reaching *terra firma* I observed that his facial expression was decidedly more combative, and that he was quite ready then for a friendly exchange of taps; this, with other incidents I could mention, has led me to conclude that the upper air is not altogether suitable or provocative for belligerent performances.

By way of illustration, I may state that Green more than forty years since was engaged to attend with one of his balloons at a park down in Staffordshire, where there was to be an experiment with dropping shells from a battery affixed to the hoop, but no one was to go up, and the aëronaut's services were only required for the preparatory work, as the long range committee preferred to manage matters themselves, so far as the adjustment and discharge

of the petards went. They selected a central spot in a wood as the area for their intended demolishment, but on setting the balloon free they neglected Green's hint to look out for a veering current, in case they had not provided a remedy, as he had, if his services had been retained for the most critical part of the undertaking. Well, the experimentalists disregarded the expert, but when the missiles were discharged they flew bang at friendly spectators instead of the camping ground of an ideal enemy, thus causing a helter-skelter stampede, including a bevy of policemen—in short, the whole affair was a fiasco; and it might have been so easily prevented, as Green's foresight had led him to think of a compensating plan to cause the balloon to go straight in the desired course; but the enthusiasts did not believe that a past master was necessary for aëronautic transactions, and it will not be surprising if some of the military adventurers to whom we have been referring find themselves similarly situated.

Last year I read that two intrepid Frenchmen made a trip to our shores from Cherbourg, and threw down as they passed some yachts near the coast a number of cork balls painted white, just, sportively of course, to see how they would act as the lightest and most harmless of grenades, without, as we may charitably conclude, any ulterior designs such as the First Napoleon is credited with when the aërial flotilla at Boulogne was talked about. But, really, in the present day, when the blowing up of ironclads is a recognized feature of warfare, and when torpedo boats can dive and make straightway at a man-of-war to strike below the belt, it is time to be on the *qui*

vive, and though aëronauts may feel no great alarm about an unexpected visit from a torpedo fleet, knowing, as they do, that the air is more than eight hundred times lighter than water, and that the difficulties to be first surmounted are proportionately great, still, there is no denying that the route overhead is open to all nations, and that a scare, lest any unwelcome guests should arrive, has actually been felt as to the possibility of their turning up from beneath the Channel. We know that John Bull and all true Britons would rather face an adversary from above, than if he were to crawl and pounce upon us from below.

But at present we need not quake as to the high or subway route.

MILITARY BALLOONING IN THE YEAR OF JUBILEE.

One of the latest and most interesting phases of this subject relates to Lord Wolseley's maiden ascent from the grounds at Lidsing, near Chatham, and to various active preparations on the Continent which have a character of their own, and are essentially dissimilar to the experiments in Great Britain.

An illustrious man undergoing his initiation in the balloon car, forms an event which is not of every day occurrence, and must prove very encouraging to the intrepid engineer officers, and also to the general public, who like to see the leading authority go now and again to the front for the sake of thoroughly inspecting, and of obtaining some practical acquaintance with any new branch of science which may be on trial.

The General's declaration that "he believed *himself* in novelties," must have produced conflicting opinions in the minds of many more conservative brother officers; but what must have been the effect of the next assertion? namely, "the more novelties the better."

Lord Wolseley believed in what Napoleon said: "You must change your tactics frequently."

The first impression made by his ascent of 500 feet, elicited the General's approval.

In the course of a conversation with one of his staff, Lord Wolseley stated that "had he been able to employ balloons in the earlier stages of the Soudan campaign, the affair would not have lasted as many months as it did years."

We get therefore a very high testimony as to the value of the balloon for military objects, and as the exploits of our war balloons do not amount, at present, to anything particularly noteworthy, the General's encouraging remarks will have an excellent effect, it may fairly be presumed.

The most recent effort in this line, near Dover, was not successful.

The balloon "Sentinel" was filled and essayed to watch the volunteers, but was forced to retire with the most eccentric capers—owing to the freaks of rude Boreas, which was, after all, merely imparting useful instruction, though not particularly pleasing, probably, to the officer who occupied the seat of honour.

It is, doubtless, a matter to rejoice over, that he was not blown out over the adjacent coast line; had he been driven away down Channel in a small skin balloon under the

influence of a north-easterly wind, he might have touched the extreme corner of the French coast, or been sent down betwixt the Channel Islands.

Happily, however, there was no fresh fatality to lament over, and the instructions imparted by the clerk of the weather as to the impracticability of captive ascents during strong winds will not be lost, and may prove of the greatest importance, so that it is well worth while referring to it as a warning for future caution.

As the writer of this book holds it to be his province, and his duty as a practical man to review both sides of public opinion respecting his speciality, he considers it right to state, that the representatives of the press, like the representatives of our constituencies in parliament, do not all take one and the same view about military ballooning; neither do superior officers or the rank-and-file, who, in these advanced days are quite capable of drawing their own conclusions.

A paragraph which I read in the Court Society Review, was to this effect.

"I have very little faith in military balloons for the purposes of observation. In the Soudan no atmospheric conditions, and many were tried, were found to be suitable, for even when the air was dead-still, and brilliantly clear, the balloon waggled to such an extent as to make telescopic observation impossible, or, at any rate, practically useless. At the Easter Monday fight, an infinitely more futile attempt was made to employ the balloon in a stiffish breeze, and the result was, of course, as worthless as the experiment was dangerous.

"All the same, for signalling, especially at night, captive balloons might be made of immense use."

Secondly, we have another rather discouraging experience, which ought not to be forgotten or omitted in these pages.

It is in McClellan's own story, about their doings on April 11th, 1862, and is rather amusing than complimentary to the cause I have so long advocated.

"I am just recovering," the writer observes, "from a terrible scare. Early this morning I was awakened by a despatch from Fitz-John's head-quarters, stating that Fitz had made an ascension in the balloon this morning, and that it had broken away and come to the ground some three miles south-west, which would be within the enemy's lines.

"You can imagine how I felt. I at once sent off to the various pickets to find out what they knew, and tried to do something to save him, but the order had no sooner gone, than in walks Fitz, just as cool as usual. He had luckily come down near my own camp, after actually passing over that of the enemy.

"You may rest assured of one thing," was the remark: "you won't catch me in the confounded balloon, nor will I allow any other General in it."

On the converse side, it should be mentioned that in a telegram received at Washington during the Civil War, it was stated, "that all the information received from *balloons*, deserters, prisoners, &c., agrees in the statement that the mass of the rebel troops were still in the immediate vicinity of Richmond, ready to defend it."

As a pioneer myself in the service of military ballooning, I heartily wish that something more had been carried out in the decidedly important neighbourhood of Suakim.

I was constantly suggesting plans; among others, to take out an apparatus and holder for the generation of coal gas, feeling persuaded that at a short notice, an enterprising private firm would have sent out an equipment with the necessary men and coals, to generate gas on the old quick and cheap plan, in addition to the compressed hydrogen system. There are, certainly, some advantages in employing the lighter gas, but several counter and compensating results might be adduced on the other side, one of which is, that in a hot climate, pure hydrogen will escape quicker than the denser production, and, I have no hesitation in saying, that a small skin balloon behaves itself in a breeze with an infinitely less steady action, than a more enlarged surface with greater vertical power imparted to it, which is one out of many of those secrets of success, which men of long experience are well aware of, and I do believe that a certain amount of co-operation between civilian experts, and the military engineers would be attended with good results.

I am not referring particularly to the English school of balloonists, but to foreign corps as well.

It is a regrettable fact that one cannot perceive in the whole list of balloon transactions in warfare, either at home or abroad, any deeds that are at present conspicuously worth chronicling. The splendid exodus of hastily organised balloonists, chiefly sailors, who went out

of Paris during the Franco-German War, can scarcely be called military ballooning.

There was no strategy, exceptional skill, or discoveries to mark and dignify their departure or descent; only a most valuable and timely postal and parcels delivery transmission.

This was excellent auxiliary aid, and altogether *sui generis*, but it was not manœuvring with the enemy or rendering fresh intelligence which could not be gained by ordinary scouts, I mean in a strictly military sense. The winged messengers (pigeons) were certainly helped in their work by having a lift up on their outward journey; but what we should like to hear of, when balloons show up in war time, is that something important has been seen and reported which would have escaped notice but for the argus-eyed aëronauts.

A considerable amount of bewilderment, as we have said, accompanies a novice's first glance of the earth's surface, when villages, fields, towns and fortresses, are seen under a new aspect, with minimised proportions reduced to the model size, and seen from above instead of horizontally.

It requires a trained observer to make heads, tails, and relative proportions out of the new map, and if any altitude has to be attained, very small machines will not do, they may be light and of little capacity, but they are unable to offer a powerful upward tug, which is indispensable for steadying the balloon when telescopic observations have to be made.

The action of diminutive machines of this kind may not

inaptly be compared to the jerking, fitful movement, of certain small birds, such as a tomtit, or a titlark, as contrasted with the soaring power of an eagle, or the steadied poise of a hawk.

The balloon, under which Lord Wolseley took a bird's-eye view, is described as "a magnificent spic and span new aërial machine, constructed of the new preparation of *bullock's skin,* and capable of containing 10,000 feet of compressed gas," by which is meant, I presume, 10,000 feet of hydrogen gas that has been compressed and subsequently liberated into the said balloon.

If I were questioned as to the value of this kind of material for the objects intended by the designers, I should, certainly, not speak disparagingly of it, because I think that skin may be very good in its way, but I believe that a certain quality of silk, all things considered, is more reliable, and if it is heavier than skin, it is more readily repaired in case of fracture, and would better resist the shrivelling effects of a hot atmosphere, and of sudden gusts of wind. Silk is also less tempting to the gnawing of insects.

If it is supposed that the use of skin is a new adaptation, I can remove any false impression of that sort by stating that half a century since, I saw and handled a huge balloon composed of similar animal substance, which was called Egg's folly. The gunmaker had built an enormous fish shaped affair, and it had, fish like, an air bladder to assist it in rising and descending. I was asked to buy the lot which had been laid by for some years, but it was not to my taste; later on, however, after Mr. Barnum had brought over the dwarf, Tom Thumb, to this country, an exhibition was

got up at the Surrey Zoological Gardens, and Mr. C. Green was asked to provide a suitable balloon to take up Tom Thumb for a captive ascent.

The air bladder then cropped up, as it would lift fifty or sixty pounds when filled with ordinary gas, and I well remember witnessing the ascent, and shaking hands with the occupant of the little car.

I was informed afterwards by the veteran himself, that Captain Currie, who was a frequent voyager at that time, wished to train and lose weight, so that the skin balloon would take him up, if filled with hydrogen instead of coal gas.

I do not think the trial came off, but I can vouch for it, that the so-called bullock's skin is by no means a novel departure.

We thus learn that history repeats itself, even in an art which is practically little more than a century old.

If we turn from the balloon force at home, and direct a glance towards the continent, as much difference is to be observed in their aërostatic pretensions, as there is between our small and compact army, when compared with the millions of bayonets (and good ones no doubt) that are ready to do battle whenever the dogs of war shall be let loose for slaughter.

In England, preference is shown for exceedingly small bullock's skin balloons.

In France they are cigar or canon shaped, with steering power and propelling machinery attached. I am referring, now, to the war balloons at Meudon.

Germany inclines to medium sized spherical balloons,

composed of silk by preference—and I think they are right—to the calico or muslin balloons in store at Chatham or Lidsing.

Russia, if we may believe newspaper accounts, is provided with an air torpedo, besides Montgolfier, and gas balloons. The torpedo air ship can take up eight hundredweight of dynamite, the application of which I have already pictured.

An American novelty consists of an electro dynamic air ship, in the form of a cigar cut lengthways, which presents a flat underside, and a rounded upper; it is constructed of seven independent cells, which are divided longitudinally, making fourteen separate compartments in all.

Among the attractions proposed for the Paris exhibition of 1889, is a captive balloon, having a capacity of 1,800,000 cubic feet, which will take up one hundred passengers.

Then comes the most wonderful invention of all, a balloon which is to surpass in speed the Flying Scotchman. The German Government is stated to have purchased this monster for a million marks, and the constructor is to have a handsome pension for life. I do not believe it!

Now, if these formidable rivals are bent on mischief, and find an opportunity of indulging their destructive propensities, there will be lively and sensational diversions overhead, no less than frightful work beneath, particularly if the torpedos act their part as expected.

Many scientific men, and all the professional aëronauts, with whom I am acquainted, regard this tall talk, not altogether in a literal and serious light, but as a scare and exchange of swagger between those powers who desire to

be thought most efficient in modern appliances for warfare. Be that as it may, there can be no doubt that vast sums of money have been expended, and extensive preparations made, in aërostatic material.

There is something about all this boasting and threatening which is calculated to disturb the serenity of susceptible persons, when they read of hundreds of pounds of dynamite and chemical compounds being cast down upon contending armies, and about forts blown up, especially when it is remembered that no shields or ramparts are ever raised, or dreamt of, to resist a vertical onslaught from the regions above. This mode of attack would, to all intents and purposes, prove a novelty, and the question is, whether the lieutenants of our far seeing general, who approves of new tactics, are prepared to resist this kind of thing should a detachment of air torpedoes swarm like wasps or locusts upon our numerically small army, or should they even seek out our tiny war balloons and demolish them with a fell swoop of explosives.

The bare idea of such an ignominious extinction brings us to the vital question of how such intruders could be sent to the right about, or brought low by arms of precision.

Lieutenant B. Baden-Powell, in his able lecture at the Royal United Service Institution, took the danger into consideration ; not I think under any apprehension about the descent of dynamite shells, but simply of the customary missiles which are discharged from cannon and small arms. We may infer that air torpedoes and such like were not dreaded.

Mr. Baden-Powell starts from an apt and thrilling commencement when he says—

"First then, the chance of being wrecked by shots from the enemy.

"It must be remembered," he goes on to say, "that the balloon would generally be some way behind the first line, and that the enemy would hardly, especially during the heat of battle, pay much attention to it. It is well to remember that if only hit by a few bullets it would not be much damaged, and could be quickly repaired. Both at Frankfort and at Frankenthal the balloons were penetrated by bullets, at the latter place by nine, but the balloon remained up three quarters of an hour after. In some experiments made at Tours, a balloon was penetrated by bullets at 1,000 yards, but the escape of gas was very slow, and the balloon remained up some time longer.

"*Secondly*—and now comes a case in point which should not be lightly passed over, it is this—

"In 1880 the Siege Operations' Committee made an experiment at Dungeness with rather more disastrous results for the balloon. An eight-inch howitzer was directed on a captive balloon 2,000 yards off, and 800 feet high. The first shot was unsuccessful, the exact range not being known. The second shell, however, burst just in front of the balloon and tore it open. But even then it took fifteen minutes to descend, so that the aëronauts would have been safe." Later tests have also taken plaoe.

Many persons would think, and as many more might argue with some show of common sense on their side, that the actual safety of a party of balloonists after their

machine had been torn open by a shell from an eight-inch howitzer was perilous in the extreme; but the lecturer had no such fears probably, as he went on with unmoved visage, I dare say, to remark that "bullets made of spongy platinum had been suggested as a means of igniting the hydrogen in a balloon by mere contact."

But these stirring and well nigh nerve-testing quotations need not be dwelt upon to any further extent, they suffice to show that the risks, without taking into consideration the doings of those horrid torpedoes, have been fairly weighed.

If the dynamiters put in an appearance, and manage by skilful steering to be in at close quarters, then all I have to say is Heaven help those who may be in their power.

While contemplating this all important phase of aërostatics, I sometimes wonder whether these and other equally important ideas have ever entered into the fertile brains of those, whose province it is to lead and direct the military balloon tactics. There are, I have no hesitation in saying, at this critical period of our national history, uses for balloons even in this country, considering its position and possible surroundings, which I could point out if they would be listened to, and which at no distant period may be found unprovided for when most needed.

I recollect when first I talked over with Major Grover, R.E., who went up with me, my plan for using small and large balloons for destructive purposes, I had such a friendly but scathing glance that I at once interpreted his meaning to the effect that "anything of that sort would not be countenanced at head-quarters."

Well, I have lived to draw attention to the very suggestions which were lightly esteemed a quarter of a century since, but I will not allude to any fresh conceptions at the present time.

Sir Edward Birkbeck, M.P., has done useful service in narrating not long since his experiences with me in the year 1862. Observations for military purposes were gone into, and our ascent made in the presence of His Royal Highness the Prince of Wales and the Duke of Sutherland was narrated with spirit. Instructive comments followed, and war balloons were referred to which have since been spoken of in a pleasing letter, wherein Sir Edward gave evidence that he still has a taste for scientific ballooning.

REMARKABLE ASCENTS

DURING THIS CENTURY.

AT no time during my own recollection, has an attempt, to reach a great height, been heralded with greater stir and interest than the voyage by Messrs. Jovis and Mallet from Paris, on August 13th, 1887.

In England, scientific men, professional aëronauts, and the public, regarded it with favour and admiration, that is, so far as their spirited intentions were interpreted on this side of the channel; and I may take upon myself to say, that it was viewed with no envious feelings, it being clear, that two enterprising men were desirous of trying their hands at adding lustre to the annals of aëronautics, and, that like a great many travellers in new and untried latitudes, these courageous aëronauts would do their best for their employers, and their own credit, or perish in the struggle, which last they were not wholly unprepared for, having disposed of their bodies in case of a fatal issue.

Of course, the press as a faithful mirror of public opinion,

was not entirely in accord with their aims, about which some wrote severely and disparagingly, as it seemed to them, that the most apparent motive for the ascent, was to settle at what height animal life could exist; and other reviewers went so far as to insinuate, that pigeons and and guinea-pigs were all very well, but iu reality, it was a thinly veiled international bit of rivalry, as to who should go highest, Frenchmeu or Englishmen.

Well, even if there existed a limited amount of this sort of thing, it was only friendly rivalry, which no true Britou could possibly object to, or be afraid of; it was not, however, to be expected that in France or England another expedition, which might be ill-fated like Sivel's and Crose Spenelli's, would be recognized without protest and free writing. Still, on the whole, Captain Jovis and Lieut. Mallet were well received, and I have little hesitation in saying that if an aëronaut, in this country, had on his own account or on that of a newspaper proprietor, done the like, he would have been, in all probability, denounced for his pains, as such an undertaking would not do here, unless a scientific society, or some pre-eminent physicist were to embark in totally fresh experiments.

As an instance of this very uatural spirit of emulation, which is to be met with among enthusiastic air travellers, I may mention, that after I had initiated the late lamented Mr. Walter Powell, M.P., by taking him a long trip from Ashford, in Kent, to Crediton, in Devonshire, he wished, among other chivalrous schemes, not only to go straight to Rome without let or hindrance, which was most plucky and ambitious, but he wanted, without being duly

acclimatised, to go seven miles high. I took upon myself to discountenance this and other suggestions, and was most likely considered a slow old coach for my pains, but I rather prided myself upon being properly cautious, and as I considered my patron's views rather too advanced for me at my time of life, I gladly allowed that gentleman to pass into other hands, and what occurred afterwards is a matter not easily forgotten.

In Messrs. Jovis and Mallet's ascent, there was a conspicuous omission in the first place, in not giving the size of their balloon. This was neglectful and ominous, as it is by figures and facts, that a fair and proper estimate can be formed as to the competency of the aëronaut and his balloon to do the work he takes in hand.

M. Wilfrid de Fonvielle, by correct calculations, found it too small for the intended elevation.

Whether aëronauts of the highest rank, such as the Tissandiers, Camille Flammarion, and de Fonvielle, were too polite and forbearing, as to impossibilities, I am not aware. The latter authority is known to be free from all party prejudices, to have an opinion of his own, and to utter it when necessary.

De Fonvielle may well have had doubts, I remember that Green had, as to the heights attained by Robertson and Gay-Lussac, the former being credited with having risen over 7,000 mètres, while the latter reached 23,000 feet—higher, be it observed, than the 22,960 feet reached by Jovis.

Green never could make out, to use his own words, "how it was that they did it with balloons, as small as

were quoted in the accounts of Robertson's and Gay-Lussac's experiments."

"Certainly," as the veteran observed, "they used hydrogen, but there must have been very little left of it on returning to the earth, if the diameters of their small balloons were no more than stated," that is as Green added with emphasis, "if they touched 22,000 or 23,000 feet."

By the light of our present investigations and deductions, it appears that many of the accounts of the early ascents in this century, viz., in 1803 and 4, are unreliable statements, and not altogether excusable.

For instance, Robertson, in his journey from Hamburg, said that "his head swelled, and that blood came from his nose."

M. L'Hoest, his companion, was violently affected in a similar way; he could not get his hat on.

Mr. Glaisher's head and mine were covered with caps, but I did not notice any cerebral expansion, being very intent upon the expansion of the gas; in short, we were always sticking to more important business.

"At their greatest elevation they could scarcely hear each other speak."

Now I found at seven miles high, and at five and six, that in the absence of all sounds it was not necessary to speak much above a whisper, and that palpitations, watch-ticks, &c., were audible with an increase of sound the higher I got.

Robertson and his friend "could scarcely resist a strong inclination to sleep."

I not only knew the great importance of keeping *wide awake*, but felt no desire to do otherwise.

Robertson's balloon contained only 9,000 cubic feet of hydrogen.

It weighed, with all its apparatus, 5 pood 2 pounds, or a little over 200 pounds, and the weight of the whole was 18 pood 3 pounds.

Now, unless these figures are incorrect, a man like Charles Green might well feel doubtful.

M. Gay-Lussac on September 15th, 1804, when he attained 7016 mètres, though well clothed, began to feel cold, he was still "far from experiencing such uneasiness as to oblige him to descend," his pulse and respiration were accelerated; these were all the inconveniences he felt, and they read to my thinking more correct and natural than Robertson's.

Green had no belief in what may be styled miraculous ballooning, by that I mean in going up very high or extremely far in a very diminutive balloon.

Practically speaking, irrespective of exact mathematical determinations, a sure and certain test is the amount of ballast taken, together with the volume of gas in the balloon at starting, and the space left for expansion, supposing that the ascent is made with only a partial inflation.

It is useless to boast of distance or height, unless sand equal to the occasion can be taken in the car; and if the diameter and depth of the machine is not in conformity with well established rules, no confidence should be placed in unsupported vapourings, as all the accessories to which

I refer must be in order and bear comparison, one with another.

In a voyage this year by German officers from Berlin, the exact number of bags of ballast they took up led me to guess the capacity of the balloon, allowing for the number of passengers, and the supposed weight of the whole; I found that I was pretty near the mark, and that the expenditure of sand was about in proportion to my own when I took Mr. Walter Powell a journey of 250 miles.

The balloon itself is no bad indicator of what can be achieved, especially in vertical motion, that is by showing the extent of expansion when the silk is throughout fully distended, and if it be so, by the force with which the gas rushes out of the safety valve; it in this way helps and checks barometrical readings, and may at times approximately take the place of that instrument for a rough-and-ready intimation of the height. For example, if a balloon mounts up when only half full at starting, and afterwards rises so high that gas escapes from the neck, then it must be between three and four miles high, roughly speaking.

It is of no use for a novice or an unscientific aëronaut to tell a fanciful tale about his lofty flights to fabulous elevations, when he is known to have taken only a moderate amount of ballast, and only one person besides himself in the car.

If one hears a story that a small aërial affair has been up miles high, or hundreds of miles horizontally, even at a low altitude, do not take it for granted that

you have been told the truth, you can easily try and prove it for yourself. Just ask a few questions as to its size, next get at its displacement of air, as you would judge in like manner of a ship's displacement of water when it has to carry so many thousand tons of cargo.

If you hear that a balloon of thirty or even forty feet in diameter has been 20,000 feet high when filled with coal gas, shake your head and fly to figures, remembering that the following simple calculations will enable you to judge for yourself. Make, in fact, yourself a balloon of tissue or Chinese paper, and bear in mind at the outset the proportion that the *diameter* bears to the circumference of a circle.

Say you make it of three feet diameter, or thirty-six inches.

In order to find the circumference, which is three times and one-seventh the diameter, multiply the diameter thirty-six by 3·1416—

Then 3.1416	*Secondly.*—By multiplying this circumference 113, by the diameter 36, it gives the superficial surface.
36 inches.	113
188496	36
94248	678
113·0976	339
	Number of superficial inches on the surface } 4068

This multiplied by one-sixth gives the contents in cubic inches—

4068
6
24408

Then if 24408, the contents of a balloon three feet in diameter is divided by 1728, the number of cubic inches in a foot, you have fourteen cubic feet as the capacity of a three feet balloon, thus—

1728) 24408 (14 cubic feet
1728
7128 and
6912
216 inches over.

If you want to find the internal capacity of a balloon three feet in diameter, first multiply the three feet by three feet to give the circumference (nine feet), which gives twenty-seven, the surface.

Then multiply by 5236 to ascertain the cubic contents.

5236
27
36652
10472
14·1372 { being 14 cubic feet and a fraction.
14

I will just give one more simple calculation of the capacity and superficial surface of a balloon thirty-three—instead of three—feet in diameter.

33	
33	
99	
99	
1089	circumference.
33	diameter.
35937	surface.
·5236	decimal numbers.
215622	
107811	
71874	
179685	
18816·6132	cubic contents.

Carburetted hydrogen or coal gas, should raise from 402 pounds, as 1,000 feet of light gas should raise 40 pounds to the 1,000 cubic feet.

If the reader is desirous of calculating either for model balloons, or, as to the size, capacity, and power of larger balloons, take note of this concise and abridged table of the diameters, surfaces, and capacities, together with the ascensive power for every foot capacity for hydrogen, so that if coal gas is used, allowance must be made accordingly.

First, for miniature paper or skin balloons.

Feet, Diameter.	Surface in Square.	Capacities in Cubic Feet.	Pounds Ascensive Power.
1	$3\frac{1}{10}$	$0\frac{1}{2}$	$0\frac{2}{3}\frac{2}{3}$
3	28	14	1 (in nearly a pound.)
6	113	113	7
10	314	523	33
20	1,257	4,189	261
	LARGER BALLOONS.		
30	2,827	14,137	884
40	5,026	33,510	2,094
50	7,854	65,450	4,091
80	20,106	268,083	16,755
100	31,416	523,599	32,725

The striking advantage of enlarging balloons, arises from the fact, that their powers increase faster than their surfaces. When the diameter is doubled, four times as much material is required, but you get eight times as much capacity.

I have now offered a few plain calculations in order to assist those who feel interested in the subject, they may be extended and more scientifically pursued in another volume of my experiences, when they will be required, perhaps, for illustration of other ascents.

I am often asked, how high will a balloon go? Will it mount higher and higher until gas is let off to stop it?

My answer is, that when a balloon, after inflation, is brought to an even balance, in other words, when so much ballast is placed in the car, that it shows a very slight tendency to move upwards, then the required ascending power is increased by putting out more sand, say to the

amount of twenty, thirty, or forty pounds, according to circumstances, I mean the strength of wind at the time, and the proximity of adjacent objects, such as trees and buildings.

With either of these limited number of weights removed, the balloon cannot rise very high, unless there is either a large space for expansion, or a very much larger quantity of sand is put out subsequently.

I will simply try this position by asking the reader to suppose that A and B, two rival aëronauts, are about to engage at one and the same time with two balloons of similar capacities to reach an elevation, say of six miles, and that both balloonists have balloons that will contain each 100,000 cubic feet of coal gas, and that they each take up one person, so that the weight of their respective balloons, each having to raise two persons, will altogether be 1,000 pounds for A's and the same for B's machine.

A's balloon is to be quite filled with gas that lifts forty pounds the 1,000 feet, but B's balloon is to be only half filled.

On testing the lifting power, A's being full, that is containing 100,000 cubic feet of gas, will, after deducting the weight of balloon and two persons calculated at 1,000 pounds, with 3,000 pounds weight of ballast.

But B's balloon would only have a 1,000 pounds of sand as compared with A's, because B's is only half full, having only 50,000 feet of gas in it.

Well, under these apparently opposite conditions, which balloon, do you suppose, would attain the greatest height?

I should say, paradoxical as it may appear, that they

would reach about the same height, because the space left for expansion in B's balloon, owing to its half filled state, would admit of the gas doubling its volume, while A's balloon, being filled at starting, would from the first irrecoverably lose gas from the neck, although it remained full to the safety valve.

B's would hold its own 50,000 feet, and it would quickly increase and multiply up to 100,000 cubic feet, and thus equal A's balloon.

The store of ballast would soon be equal. A's 3,000 pounds would, at three and three quarter miles high, be reduced to the level of B's, which was 1,000 pounds at starting, with only 50,000 cubic feet of gas.

I have frequently adopted this system, but as I shall advert in the next part of my experiences to cases in point, I prefer now to refer to two of Mr. Green's high ascents in proof of the practicability and objects of this method, which saves labour in casting out so much sand, and saves expense as well.

The two voyages of Green, which were made in the years 1838-9, have altogether escaped notice in the recent reviews of the most remarkable scientific ascents in the present century.

Robertson's, Gay-Lussac's, Bixio's, and Barral's having been mentioned, but not those of Green, which came after the ascents of above experimenters, and long before the fatal one by Croce Spinelli and Sivel, and that lately made by Captain Jovis and Lieutenant Mallet.

On the 4th of September, 1838, the celebrated Nassau balloon, which at that time was the property of Messrs.

Gye & Hughes, the proprietors of Vauxhall Gardens, ascended from them with Mr. Green, Mr. Edward Spencer, and Mr. Rush of Elsenham Hall, Essex, the latter gentleman having engaged the balloon for experimental purposes, and more particularly on this occasion for ascertaining the greatest altitude that could with safety be attained with three persons in the car; and further to ascertain the changes of temperature that would take place at different elevations, as well as the variations of the currents of air; and finally, to establish the important fact, as to whether the same difficulties with regard to respiration in a very rarified atmosphere would be experienced by persons rising in a balloon to any great altitude, as have been felt by persons who have ascended lofty mountains, and by previous aërial travellers in balloons to great heights.

They left the earth at twenty-five minutes before 7 p.m. with two barometers standing at thirty inches each.

One of these instruments, as well as a thermometer, was furnished by Mr. Rush, constructed on the most accurate principles, and made expressly for the purpose.

The thermometer stood at 66° Fahrenheit.

The following were the variations:—

	Barometer.		Thermometer.	
	30	inches.	66	degrees.
	23	,,	56	,,
	21	,,	53	,,
	19	,,	46	,,
	18	,,	42	,,
	17	,,	39	,,
	16	,,	35	,,
Greatest altitude	15	,,	25	,,
	14·70	,,	25	,,

On first rising they took a north-westerly direction; at 2,500 it changed to the north, and shortly afterwards to north-east.

Their journey was pursued towards Epping, and they were discharging ballast all the time. Leaving Dunmow to their left they attained their greatest altitude, namely, 19,335 feet, or three and a half miles and 855 feet.

In consequence of the great quantity of sand discharged after clearing the Metropolis their ascent became very rapid, and, from the great expansion of the inflating power, the gas rushed out from the lower valve in considerable torrents.

The velocity of their upward progress caused the balloon to rotate in a spiral motion with astonishing rapidity.

During their trip about 1,200 pounds of ballast was discharged, but they reserved 100 pounds by which to regulate the descent.

During their descent, when at 1,200 feet from the earth, a heavy fall of snow was encountered, accompanied by a sudden and very great reduction of temperature, the thermometer dropping to 22°, or 10° below freezing point. The mercury in the barometer at this moment had risen to nineteen inches.

I mention this circumstance for the purpose of showing that sometimes sudden changes of temperature have been experienced, not only by Green, but by Bixio and Barral later on in the present century.

The fatigue of the muscular powers, occasioned by

exertion in emptying ballast, did not occasion any serious inconvenience in respect to difficulty in respiration.

We shall see, in the next ascent which was still higher, that the plan I have already exemplified as to allowing considerable space for expansion was resorted to, and this saved both the necessity for and the depression consequent upon hard work, although a large volume of gas was literally wasted, which might, in an economical point of view, have been prevented; but it will serve to show that a large balloon partially inflated, with a reduced amount of sand, is for all practical and scientific purposes preferable to a fully inflated balloon, that is, for very high ascents.

The ordinary way of examining the specific gravity of the different gases is by a simple method founded on the principles of pneumatics, for discovering the relative specific gravities of the aëriform fluids.

This consists in observing the time that a given portion of the gas, under a determined pressure, takes to escape through a very small aperture. The density of the gaseous fluid must be inversely as the square of the interval that elapses.

The weight of the balloon and all appendages must evidently compress the included gas, and thereby render it in some degree denser.

To compute this minute effect, we have only to consider that the pressure of a column of atmosphere at the mean temperature, and near the level of the sea, is 1632 pounds on a circle of a foot in diameter.

Thus, in a balloon of sixty feet in diameter, if we suppose the whole load to have been 6000 pounds, the compression

of the bag would only amount to five-thirds of a pound for each circle of a foot in diameter in the horizontal action, or corresponding to the 979th part of the entire pressure of the atmosphere.

But the weight of the confined gas (hydrogen) being 1200 pounds, its buoyancy must have suffered a diminution of somewhat more than a pound or one-eleventh from the circumference opposed to it.

But as I have purposely abstained from giving in this first elementary part any computations of an abstruse order by more learned and capable writers than myself, I shall reserve further remarks on this particular head for my subsequent volume.

ASCENT, OVER FIVE MILES HIGH, BY GREEN AND RUSH.

I have before me a mass of leading articles and newspaper cuttings alluding to the ascent of Messrs. Jovis and Mallet, in which honourable mention is made of the lofty explorations by Robertson and L'Hoest, Gay-Lussac, Bixio, and Barral, together with Mr. Glaisher's and my own, but Green's with Rush are invariably omitted, and yet these were quite as important, while the second was higher than that made by the intrepid French balloonists, and, so far as physicial results go, the Englishmen do not appear to have fainted or been much troubled.

It is of immense importance to note this, as there can be no doubt that a certain zone exists, in entering which some persons are more susceptible than others to lessened atmospheric pressure, and here they begin to feel the bad

effects, which, by the way may come on without warning, just as it is with Alpine travellers, although there are marked distinctions between the two, but we cannot enter upon that in detail in this chapter.

This trip, by Green, was one of those which was designed to add a fraction of knowledge to the already existing stores of science. This fact is sufficient, even according to those who are not great admirers of ballooning, to warrant its encouragement when taken in hand by those who do not affect to be mere aëronautic performers, embarking in aërostatic pursuits for sensational objects, or with the vain and delusive idea, that it is not dangerous, and that it is a money-making concern.

Mr. Rush, assisted by the knowledge of his coadjutor, threw a character of deep interest over the whole subject of aërostation, and this trip, though lost sight of, at the present moment, is well worthy of re-production, serving as it does, two ends; firstly, to call attention to the fact, that English aëronauts seem to get more toughened by acclimatization to rarified air than Frenchmen, and secondly, that they do such work with less ado, and with equal, perhaps a little more, methodical foresight and precision, than our more dashing and mercurial neighbours.

It was on the 10th of September (what a number of exceptionable journeys were made in this month!) that the highest ascent which had been made up to that date, came off from the far-famed Vauxhall Gardens.

The proprietors made arrangements with Mr. Rush for

it to take place in the afternoon, that gentleman engaging the car for the occasion.

The time allowed for preparation was limited. The first object to be gained was that of diminishing the weight of the apparatus to as low a point as due regard to their personal safety would admit.

A small car was substituted for that commonly used. At five o'clock in the afternoon, Green ascertained the power of the gas with which the "Nassau" balloon was charged, the tranquil state of the weather rendered this an easy operation.

On examination, Green found that the whole weight of the balloon and its appendages was 4,084 pounds thus constituted:

Balloon, netting and car	700	pounds.
Ballast	1,500	,,
Mr. Rush	145	,,
Mr. Green	145	,,
Light, grapnel and rope	52	,,
Cloaks and barometers, &c. ...	30	,,
Twenty-seven half-hundredweights slung round the hoop	1,512	,,
Total	4,084	,,

Please to note that Green then opened the upper valve, and discharged a quantity of gas equal to the power of the twenty-seven half-hundredweights, which were then removed from the hoop.

Why, you will ask, was this gas wasted, or put into the balloon? I suppose for the sake of appearances and

symmetrical distention, but had Rush uot been paymaster, it would most assuredly uever have entered.

The departure took place with au ascending power of 112 pounds—very considerable indeed.

Barometer stood at 30·50 just before leaving, and thermometer at 60°; before seven minutes had elapsed, they had falleu, the former to 20, and the latter to 36°, equal to 11,000 feet or two miles.

Had it not been for the miserable aspect the balloon would have presented, more gas would have beeu let off equal to an additional 1,000 pounds, aud theu not more than 500 pounds of sand ueed have been shipped.

At 11,000 feet they were driven south, after going north-east.

Green was continually casting out ballast; on attaining 16,000 feet—three miles—they entered a current blowing at the estimated speed of sixty miles an hour, though they never stated, more's the pity, how under such a rocket-like rush upwards, they found time to determine that this wonderful current existed.

The only inconvenience (this is noteworthy) Mr. Rush sustaiued, arose from the constant escape of gas from the rapid asceut.

Mr. Greeu suffered severely from the cold in his hands and feet.

They were uow exposed to the influence of roariug winds, but from what I can make out, it was only the effect of quick vertical ascent; here the aëronaut, owing to the exertiou he had to undergo, found it a matter of the utmost difficulty to fetch his breath.

The greatest altitude reached was 27,146 feet, indicating an elevation from the earth of 5 miles and 746 feet, the barometer, at this point having fallen from 30·50 to 11, and the thermometer from 61° to 5° or 27° below the freezing point.

Ballast had been reduced to something under seventy pounds, which Green resolved on preserving, and the result of their descent, which was never minutely entered into, proved the propriety of this reservation.

In the descent, they discovered something which very much bore the appearance and consistency of snow. Mr. Rush's attention was called to it, but after consideration they were inclined to think that the substance was not snow, but the dew and moisture congealed by the cold.

It would be instructive to know how Captain Jovis, who must have had the night dew on his balloon at the early inflation in Paris, got on in this respect. His idea was that the sun would dry the moisture, but I was under the impression that there would scarcely be time for a globular shaped machine to get dry all round during the inflation. However, they may, like Green, have encountered a snow storm without there being, as indeed was unlikely, any damp clouds overhead at that elevation; what I mean is, if the balloon itself shed and shook off innumerable particles of frozen moisture, there can be no wonder that such was noticed and mistaken for a fall of snow.

After Rush and Green had hovered over Lewes in Sussex, a descent was effected near Southover; there was not much hovering *I should say.*

In this ascent they had the double advantage of

witnessing the setting sun (prior to their quitting the earth) and on their reaching 12,500 feet of being once more within the sun's rays.

Another important consideration bearing upon this chapter is the celerity with which balloons make their ascent.

It is obvious that the efficient power of ascension, or the excess of the whole buoyant force above the absolute weight of the apparatus, would, by acting constantly, produce always an accelerated motion. But this is very soon checked, and a uniform progress maintained by the increasing resistance which the huge mass must encounter in its passage through the air.

The velocity which a balloon would gain from unobstructed acceleration must, from the theory of dynamics, be to that which a falling body acquires in the same time as the efficient buoyancy is to the aggregate weight of the apparatus and of the contained fluid. Thus, if a balloon were to rise with a force equal to the eighth part of its compound weight, the celerity resulting from a constant accceleration would be expressed by multiplying four feet into the number of seconds elapsed since it was launched into the air. Its advance, however, being opposed, the balloon though still affected with partial oscillations, the final velocity is effected in perhaps little more than double the time required without such obstruction.

This final velocity, or the velocity at which the ascent becomes uniform, the resistance from the air being then equal to the efficient buoyancy of the balloon, is easily calculated.

The resistance a circle encounters in moving through any fluid in the direction perpendicular to its plane, is measured by the weight of a column of that fluid, having the circle for its base, and an altitude equal to the height from which a heavy body in falling would acquire the given celerity.

Near the level of the sea, and at the mean temperature, a column of atmospheric air seventeen feet high, and incumbent on a circle of one foot in diameter, weighs a pound avoirdupois, which is, therefore, the resistance that a circle would suffer if carried forwards with the celerity of thirty-three feet each second.

According to the same theory, however, which we owe to the sagacity of Newton, the resistance of a sphere is just the half of that of its generating circle, and consequently a velocity of forty-six and two-fifths feet in a second through the air would in ordinary cases create a resistance of one pound to a ball of one foot in diameter.

In other circumstances, the quantity of resistance must be proportional to the square of velocities, and of the diameters. Whence, if the buoyant power were always the same, the velocity of the ascent of a balloon would be inversely as its diameter.

I introduce these few observations, which are by a much higher authority than my own, because it occurred to me that my own remarks might be considered too homely for some of those who may read these lines, but as I have merely aimed at affording amusement with a moderate portion of instruction, and do not write for scientific men, but for general readers, I shall hope to gradually progress in this treatment in a subsequent volume.

A JUMP OUT OF THE CAR IN AMERICA.

Among the numerous newspaper reports which are on my table, are several relative to what, in plain unvarnished English, we should describe as a parachute descent. But the one I allude to was not like Cocking's, Garnerin's, Le Turr's, or Hampton's, it had a size and peculiarity worth notice.

This American parachute had a very small and possibly inferior covering; it was hardly equal to the man who is sketched with herculean proportions, and required, one would say, a more efficient support, especially as he indulged in no car or wicker protection, but hung earthwards with his hands grasping the hoop.

The descent is described as successful, it was made from a balloon on August 9th, at Rockaway, New York State, U. S. A.

The aëronaut's name was Thomas S. Baldwin, and he first ascended in his balloon the "City of Quincy," which rose to a height of over a 1,000 feet, when he grasped the parachute and cut himself adrift from the balloon.

The manœuvre shows a want of aëronautic common sense which the newspaper description of "jumpiug out of the car" tends to intensify.

The time of his descent was one minute and twenty-four seconds.

It is said, that to the spectators below, a white cloud seemed to fall. For a distance of seventy-five feet the parachute gave no signs of expansion, and it was feared that another death would be added to the roll of those who

have made this perilous experiment. Then the umbrella-like mass spread and hung like a white dome over the aëronaut's head.

It soon rolled in circles with a slight rocking and swaying motion from side to side, until at length Mr. Thomas S. Baldwin was landed, or rather watered, to a depth of only a few feet, apparently none the worse after a renewed acquaintance with his mother earth.

AN ENGLISHMAN'S PARACHUTE DESCENT IN 1839.

Mr. John Hampton, with whom I first ascended, came down three times in a newly constructed apparatus which was in many respects superior to the American's. The upper part of Hampton's parachute was, in all respects, in the form of an umbrella, having whalebone ribs, and a curtain besides, below the ribs, like the sunshades patronized by the ladies not long since.

Mr. Hampton determined, in the summer of 1839, to outstrip all competition by descending, after leaving the Montpelier Gardens, at Cheltenham, by stealth, in his balloon "Albion." The fate of Mr. Cocking, and the censure which the proprietors of Vauxhall Gardens incurred, induced the owner of the Montpelier Gardens to withhold his consent to the experiment, but in order to carry out Mr. Hampton's firm resolve and to gratify the curiosity of an immense number of spectators that were assembled upon that occasion, the manager agreed that the balloon and parachute should be exhibited, but on no account should ascend higher than sixty feet from the earth for fear of accident.

When Mr. Hampton had reached this altitude, he severed the rope which held his balloon, and the astonished spectators then beheld the intrepid aëronaut majestically sailing towards the clouds previous to his separation.

At two miles from the earth (let us say, rather, at a fair elevation), he determined upon cutting away; but previously, he opened his parachute by means of a small block and rope before he separated it from the balloon, and by adopting that plan made an easy and safe descent at Copperley.

His second attempt was from Cremorne Gardens, Chelsea, when he came down in fine style, and was conducted back to the Gardens, accompanied by an immense concourse of people, who were not sparing in their approbation of his daring exploit.

The third experiment was made from Bayswater, but the parachute caught on one of the trees in Kensington Gardens, and Mr. Hampton was thereby injured, but soon recovered.

He managed to split his balloon with a thin cord before casting loose, and altogether his plans were unique.

CHANNEL BALLOONING.

DURING the past six years some of our more daring aëronauts have embarked in a succession of voyages from Dover and Hythe to France and Flushing, with the idea, it would seem, of rivalling the memorable trip made by Mr. C. Green in company with Messrs. Holland and Monck Mason, who journeyed from Vauxhall Gardens, in the year 1836, to the Duchy of Nassau.

A recent ascent by Mr. Morton, who is called the Birmingham Aëronaut, has had newspaper laudation, but aëronautically speaking, it does not surpass or equal Mr. Joseph Simmonds' journeys in length and risky surroundings, nor General Brine's, and Mr. Dale's performance, nor the late Colonel Burnaby's ascent from Dover, which extended beyond Dieppe, and was made in Mr. Thomas Wright's balloon. Mr. Morton's trip is not equal to the preceding, though unexpectedly good in its way.

The laboured efforts and fatal results of some of the later attempts to cross over do not raise the estimation in which ballooning is held. They would have been better left alone. Many of the mishaps, and they have been frequent, point to perils which the old masters neither

saw or complained about, whereas our modern heroes ought to be more expert.

We have also lately had a touch or two of what may be correctly styled *Bogus Ballooning*. I refer to more than one report about a cross-Channel run, which never took place, as I have ascertained after ample enquiry. However I am well aware that the press cannot always escape this sort of imposition being practised upon reporters who are not proof against a hoax. I remember that when Henson's flying machine was completed, a morning newspaper of high standing contained thrilling details of a first flight, which was merely a flight of fancy after all, as the ponderous mass never budged an inch.

In a later volume of my experiences I shall have to notice, on arriving at the proper date, the impediments and drawbacks to the advancement of ballooning.

It is known to those who admire and aim at promoting this subject that a few would-be inventors and so-called scientific men, who trade and traffic in this and other cognate arts actually retard instead of furthering aërostatics, they hold out false hopes, hoist false colours, and deceive the very elect, the result being that aërostation is at a stand still, or, in fact, loses *caste* to some extent.

Let us trust that these hints will lead to a new and brighter era, when military and meteorological ballooning will be further applied to useful objects, and that both combined, aided by sincere and competent abettors, will bring about the solution of aërial navigation.

NOVEMBER 1887.

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