

Balloons for dropping explosives by wireless electric current.

Over the head of the mounted officer can be seen a dummy charge suspended. The small balloon is carried by the wind to the enemy's position, and the charge released by a current from the large balloon, which is stationary.

THE AIRSHIP AS A DESTROYER.

BY OAKLEY WILLIAMS.



Naval signals are used for the small balloon, and are affixed before it starts.

particularly acquainted with the ingenious person that contrived it."

Seven centuries have taken wing, and until lately the airship of his conjectures had never flown at all. The dirigible

HERE is certainly a flying instrument," wrote Roger Bacon in the thirteenth century; "not that I ever knew a man that had it, but I am particularly acquainted with the ingenious person that contrived it."

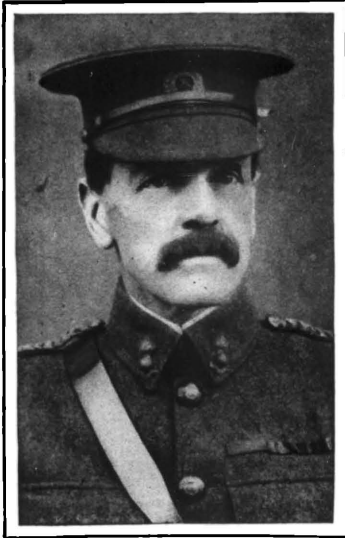
balloon, the airship that answers her helm and is no longer the sport of every wind of heaven, might be a fact, but it had never yet sailed within our ken. Therefore it was a thing of no account.

One fine October morning, unheralded and unannounced, came the awakening. An airship, looking like a monstrous thing from some artist's nightmare, dipped out of the smother over the familiar realism of Shepherd's Bush, slid over Buckingham Palace, passed down the Strand, and wheeled obediently round the dome of St. Paul's as though circling the hub of the British Empire. Then it retreated, docile still, over the South-Western Railway towards Clapham Common. Think of it,—the Arabian Nights and Clapham Common! Docility could ask no further test. London was a con-

Illustrated from special photographs by Charles Knight & Son, Aldershot.

vert, and believed at last in the conquest of the air, and the impression left upon our sight seems likely to be indelible.

It chanced that while the airship was slipping along the Strand the writer was



Colonel J. E. Capper, R.E.,

Who is to superintend the construction of a fleet of British airships.

standing at the side of a well-instructed citizen of weight and worth. Quoth he, with eyes glued skywards, "Bless me! it's walking down Fleet Street now. They seem to be able to do what they like with it."

"Well, the papers for the past week have been telling you."

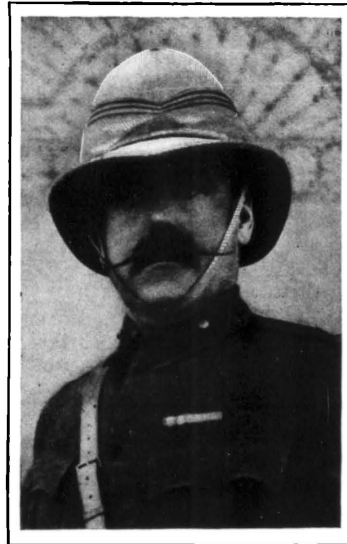
"Yes, I know: the papers! But look! they are taking it round St. Paul's. Begad, it's uncanny. One can hardly believe it."

"But, my dear sir, the *Patrie* in France, and the *Zeppelin* in Switzerland, and the other one in Germany!"

"Yes, I know. Condemn France and include Germany. But they've steered this gasbag straight over the heart of London; and now it's quietly sailing home again. What was there to have prevented them from dropping a bomb or torpedo or something of the kind clean on top of our blessed heads while we were standing here? Bless my life and soul, it's a corker!"

The Fate of Most Airships.

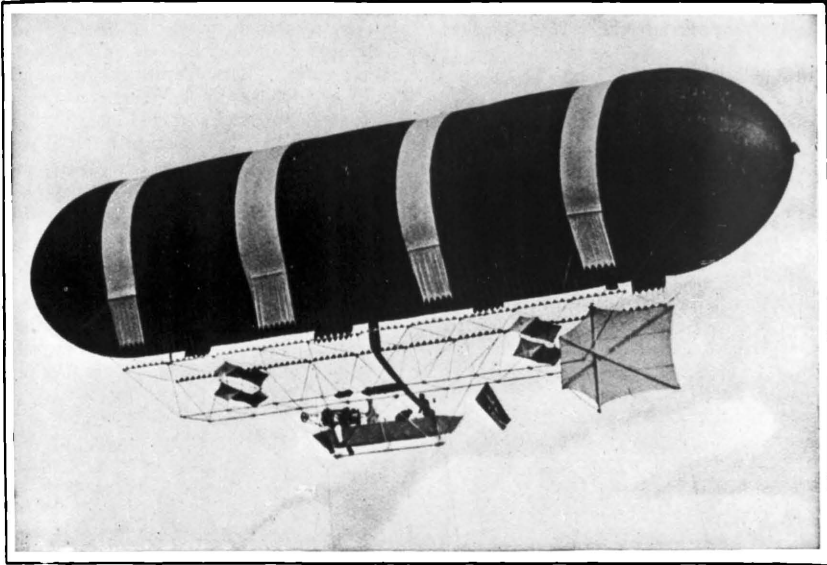
It was of course an anti-climax that *Dirigible No. 1* in the end returned in a lorry to the factory a bundle of flaccid envelope and disjointed rods, but that hardly affects the value of the object-lesson it conveyed by its first public performance. The *Lebaudy I.*, the forerunner of the now famous *Patrie*, with a hundred successful ascents to her credit, came to a similarly tragic end. After her great journey from Moisson to Chalais-Meudon in 1903, when, after three days and nights in the open, she covered over two hundred kilometres, she committed hari-kari against a tree-stump and collapsed a hopeless and ignominious tangle of canvas and clock-work. *Zeppelin II.*, after four years of patient toil, broke down in mid-air: a few weeks after her first ascent she came down with a crash on frozen ground in the heart of a forest, whence it was impossible to extricate her, and where a few days later a storm pounded her to



Colonel Templer, R.E.,

The first Director of the Balloon Factory at Aldershot.

scraps and scattered her. That the first British airship, after a similar test, was worth the cartage back to Aldershot is simply a proof that her constitution was stronger than that of most pioneers in the

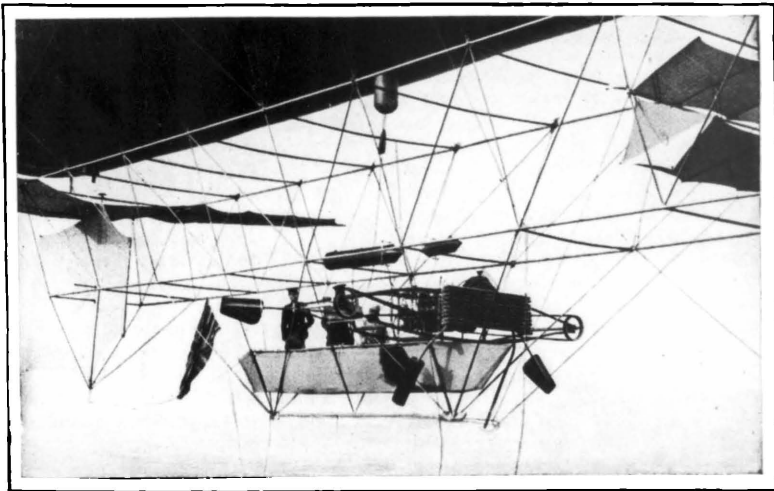


The "Nulli Secundus" on her first trip.

field. Yet to-day France has the building of at least half a dozen dirigibles of the *Lebaudy* type in hand; and this year *Zeppelin III.*, which has already given proof of her ability to make over thirty miles an hour, will in all probability take flight from the Lake of Constance to the

coasts of the Baltic. *Dirigible No. I.* has justified, as well as anything can, the proud challenge of her unofficial title, *Nulli Secundus*—except perhaps in the matter of grammar, for a ship, even an airship, is surely a feminine.

That we can afford to be complacent



The navigation car of the "Nulli Secundus."
Seen by telephoto from a convoy balloon.

to-day we owe less perhaps to the provident policy of a far-sighted War Office than to the energy and persistence of two men—Colonel Templer, the first Director of the Aldershot Balloon Factory, and his successor, Colonel Capper. To Colonel Templer belongs the credit of forcing aeronautics as an arm of our military equipment on the attention of a reluctant authority, just as later on he was the first to call attention to the possibilities of mechanical traction in the field, which under his direction did sterling service in South Africa. A militia-man, his name first appears, I believe, in the Army List in connection with the Edmonton Rifles. But he is the type of the soldier with brains, who, in whatever capacity he may enter the Service, unobtrusively leaves his mark on it. A restless appetite for work, and a wonderful capacity for enduring douches of cold water from above with equanimity, are among his chief characteristics. Those who have worked with him would probably add a capacity for taking pains that must be very near akin to genius.

Balloon Work in the Boer War.

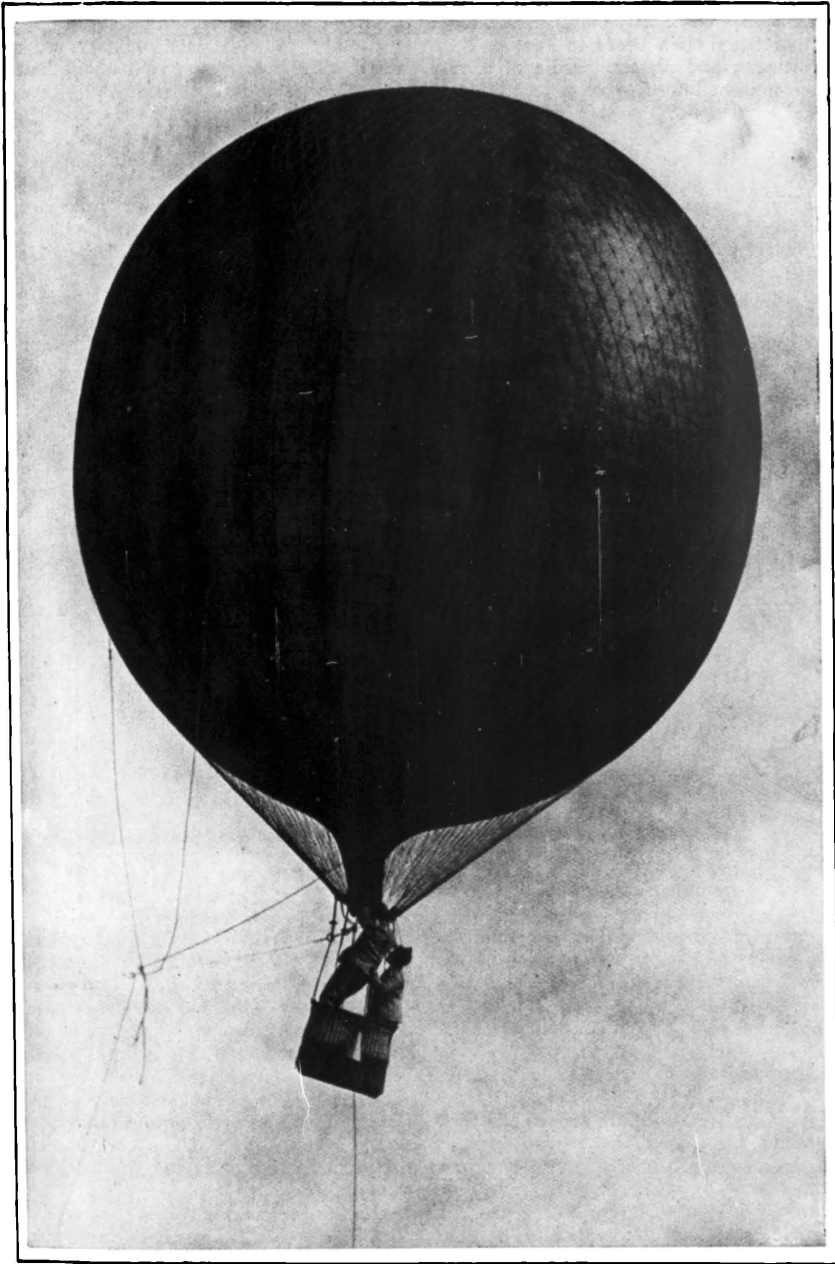
Among other hobbies, Colonel Templer was from the first a keen aeronaut. One of his adventures in the early 'eighties recalls one of the most tragic incidents in the history of ballooning—the disappearance of Mr. Powell, whither no man ever learned. The accident might well have broken a less iron nerve, but Colonel Templer was not to be shaken lightly from his patriotic resolve to teach our War Office the lesson of the usefulness of the balloon for military purposes, which the siege of Paris had first made clear to the rest of Europe. Lord (then Sir Garnet) Wolseley seems to have been one of the first to appreciate the possible usefulness of the balloon in warfare. In his "Soldier's Pocket-book" of 1882 there is a brief allusion to the services it might render in reconnaissance. This was a beginning. Colonel Templer got his Balloon Section of Royal Engineers, and was henceforward left very largely to his own devices. The first appearance of the balloon at manœuvres was generally treated as a welcome incident of comic relief. The only effect this had on Colonel Templer was to make his balloon section one of the most compact and

efficient corps of specialists in the Service. When at Paardeberg the captive balloon did very useful work in smelling out the rabbit warren where Cronje had gone to earth, and for this the Artillery at any rate entertained a very high opinion of the usefulness of the Balloon Section R.E.

When the time came for Colonel Templer to retire from active service, it was fortunate that there was a man with Colonel Capper's qualifications ready to carry on the work. At Chatham, soon after he had left Woolwich, Colonel Capper had learned all he could of ballooning from Colonel Templer. Then India and a variety of public works claimed him. A notable bridge in Cashmir is a lasting monument to his skill as an engineer. One of the hardest jobs perhaps that came his way was road-building and clearing up the litter generally after the Tirah campaign. On the outbreak of trouble in South Africa his long apprenticeship in railway work of all kinds proved valuable. He was one of the first Engineers to arrive in Pretoria and Johannesburg, and what he found there kept him busy. The end of the war found him a very young Colonel and a C.B., with two mentions in dispatches to his credit. On his return to this country, the vacancy at the Balloon Factory provided him with a billet after his own heart, and gave Colonel Templer a successor who carried on the work in the same spirit in which it had been begun.

The Balloon Factory at Aldershot.

The tall, box-like buildings on Farnborough Common, surrounded by a fringe of grimy workshops, whither not long ago the factory was removed from the Royal Engineers' Headquarters at Aldershot, have shown that they can keep their own counsel remarkably well. Outwardly they look as flimsy as a house of cards, because they are built of uralite, a curious fireproof substance, and offer very few windows to incite the curiosity of those who happen to be outside. Also they are self-contained, and self-sufficient. Every part of the *Dirigible No. 1*, except the motor-engine itself, was built within its walls. The sapper often strikes one as the handy man of his branch in the Service. At the factory he may learn the handicraft of a skilled brass finisher, for the valves, which are of quite another pattern from the "butterfly" valve of the



*A monster war balloon of 15,000 feet capacity.
Seen from a rival balloon.*

civilian balloon, require very careful workmanship. Or it may fall to his lot to sit cross-legged on a board in another compartment, and ply the needle of a very accomplished needlewoman.

The factory also strikes one as an establishment that is kept up to date. At the St. Louis Exhibition of 1905 a process for the manufacture of hydrogen in bulk by more economical and convenient methods than those hitherto employed was first shown. Not long ago certain plant and masses of curious ironmongery found their way within the ring fence of the factory, which gave colour to the suggestion that the new process was being installed there.

The Use of the Man-Kite.

Captive balloons, for military work where steadiness is an essential, are best suited for still days. In anything of a wind the continuous side jerk and tilt on the car limits their usefulness. To supplement them, entered not long ago with his kites Mr. Cody, a man of many parts whose sombrero and frock-coat have of late lent a touch of exotic picturesqueness to Laffan's Plain. He first made his name far-sounded by his sporting attempt to cross the Channel in an open boat towed by one of his kites. He made his first entry into Aldershot, I believe, with his own touring



Cloudland.

From the collection of Frank Butler, Esq.

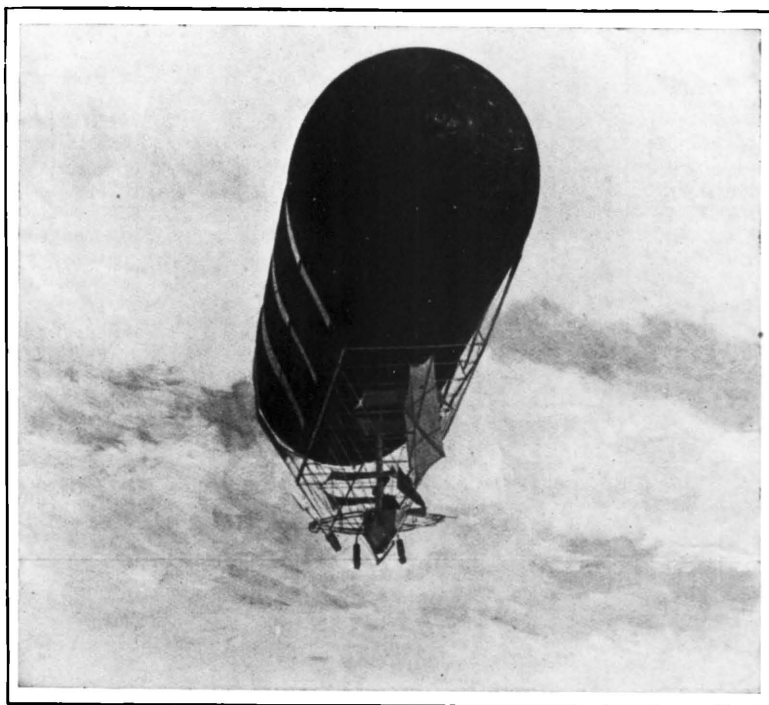
For, unlike the civilian, our military balloons are inflated by hydrogen, which has a far higher lifting power than the less expensive coal gas of commerce. The envelopes are made of goldbeaters' skin in the place of silken canvas—a material which, so far, can only be made in comparatively small pieces. How these small squares are pieced together into huge envelopes which reduce leakage to a minimum is one of the secrets which for years the factory has kept severely to itself. But the finished article admits of no disguise. The new military balloon, before weather and exposure have toned it down to dull gold, is a thing of beauty, a globe of shimmering opalescent silver.

company in "The Klondyke Nugget," and he stayed on to become an honoured member of the factory staff. For, given the necessary wind, his kites can raise a man, seated as comfortably as in his own armchair, as high as he would probably find it necessary to mount in a captive balloon. The first sight of his box kites will show that they can claim pretty close kinship with the aeroplane of the type wherewith Santos Dumont, for example, has been experimenting.

How far the dirigibility and the docility of *Dirigible No. 1's* behaviour were due to the planes that formed part of her gear is probably a question which her pilot alone could answer conclusively, but there is little doubt that some very interesting

information on the vexed questions of stability and equilibrium has been gleaned from her first few trial flights. If *Dirigible No. 1* is in herself mainly experimental, she is the outcome of long years of careful and patient test and trial. It is at least eight years since Colonel Templar made his first trials with the now familiar "Saveloy" balloon.

"fighting ballast," torpedoes or other disagreeable missiles. At the outbreak of war it will be the business of the airship fleet to discover the plan of the enemy's mobilisation as no other spy could do, and hamper them by the destruction of telegraph lines. Then it will discover the strategy of the enemy's advance, and disconcert it by destroying



The new military airship ascending on her first voyage.

The end nearest the spectator is the stern, and the rudder is the workable disc or screen with the cross-ribs.

The Airship in War.

The military airship is no longer a speculation or a theory—she is an accomplished revolutionary fact. It is therefore of more than academic interest to glance at the views expressed by Major Moedebeck, of the German Balloon Corps, one of the sanest and soberest of critics, of the part the airship is destined to play in deciding the fates of empires. He postulates an "ideal" airship able to do 54 kilometres (say, 35 miles) an hour, to carry a ten hours' provision of petrol, and to raise 500 kilogrammes of

railways or blowing up bridges as occasion may arise. Further, the Major thinks, if the airship were to accompany the march of the hostile army, and by day and night drop an occasional bomb among its ranks, the soldier's nerves might be on raw edge long before he had come within sight of the enemy. Further still, it might make itself felt by an occasional dash for the chief depôts in the enemy's country, in the amiable endeavour to set fire to its stores.

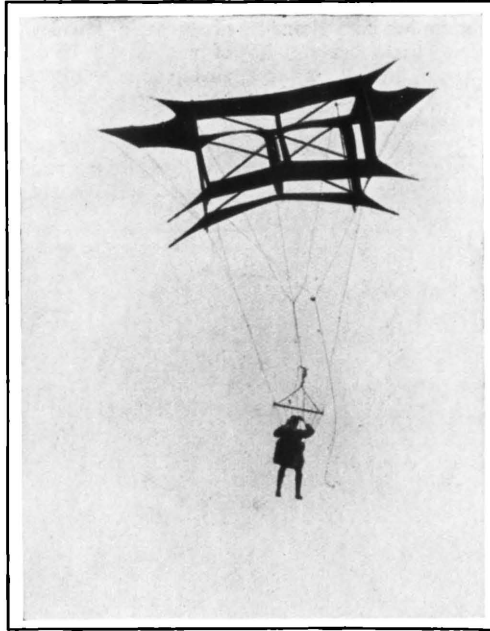
Once the armies are in the field, three main duties fall to the airship—reconnaissance, attack, and the harassing of the lines of communication. For the purposes of

attack it might help to decide the issue by devoting its attention to the headquarters staff, and thereby paralysing, or at any rate seriously interfering with, the brain of the army. Further, it should be able to take in the rear any batteries in action, and distract the attention of their gunners. The convoys and supply columns in the rear would be at its mercy. It needs little

imagination to conceive the moral and intellectual damage, quite apart from material hurt, which an airship, floating over a crowded town, herself removed above reach of reprisals, scattering explosives impartially, might inflict on the defenders. A couple of well-aimed torpedoes would without difficulty account for the gas reservoirs or electric-light works, and add darkness to the horrors of a siege. For the ugly work of incendiarism, more especially when the fire-brigade stations have been wrecked, the airship has peculiar and horrible qualifications. Similarly, by keeping the attacking force continually on the move, and by endangering their lines of communication and transport, an airship on the side of the besieged might prove a valuable asset.

Dropping Torpedoes.

The carrying capacity of any aerostat must be determined by its lifting power, and its muniments of war must always serve as its fighting ballast. Hence the expenditure of ammunition, aerial torpedo, hand grenade or what not, must always



Reconnoitring in mid-air, suspended from one of Mr. Cody's war-kites.

spell loss of ballast, and thereby affect the equilibrium of the aerostat. To throw an empty bottle over the side of a free balloon is to send it higher, if only by a foot or so. But the ideal airship should be able to carry a fighting armament of 500 kilogrammes (say roughly something under 10 cwt.), in the shape of light aerial torpedoes or other explosives, and she would then in all conscience

be terribly formidable. Major Moedebeck is of opinion that at the height of anything up to 5,000 feet the fire of an airship should be effectively aimed, because the aeronaut as he drifts hundreds of feet above has a view of his target such as no gunner could hope to obtain.

Some very ingenious experiments carried out by Colonel Templer with the free balloon, before the Hague Convention agreed to impose a close season of five years (it expired in 1903) on aerial missiles of all sorts, showed that the effect of explosives dropped from above was very drastic. A pilot balloon carrying a charge of gun-cotton was launched from a captive balloon and directed to drift with the wind over a given target. At the right moment the charge was dropped and fired by electric current from the captive balloon. The results were said to be startling and devastating.

Dockyards and harbours too lie at the mercy of the airship. Moedebeck's "ideal" airship, with a speed of thirty-five miles an hour, would have the legs of the fastest cruiser afloat, unless the vessel, by changing her course, threw the force

of the wind against the airship. But an airship may be built for £10,000, and a couple of lucky shots that happened to find their billet might well put a *Dreadnought* to the value of £2,000,000 sterling out of action. Finally the airship's services as a scout may well be as useful at sea as they will be on land. Santos Dumont has left it on record that at a height of several hundred feet he could trace the course of a submarine travelling a considerable depth under water, and wholly invisible from either sea or land.

Sniping Airships by Artillery.

The airship of the future will never of its own choice fly high. Hence we can imagine her being caught between the fire of two light guns mounted on motor carriages, chased and winged before she can get away. As long ago as 1870 the ingenious Herr Krupp built a light 3·7 cm. gun, mounted on a light carriage, especially designed to stop the flight of balloons from Paris. This somewhat primitive weapon on a horse-drawn carriage boasts to have bagged the *Daguerre* at Jossigny. In any case, a quickly moving gun of a

5·5 calibre which should command the air to a height of, at any rate, 4,000 feet, is calculated to modify materially the best-laid plans of any airship afloat.

Colonel Capper declares that, however perfected the dirigible, its field action is always likely, owing to the delicacy and intricacy of its mechanism, to be dependent on a base, determined by its workshops. The dirigible now holds the command of the air, but at any moment it may be superseded by a flying machine "heavier than air."

The Moral of it all.

The command of the air will infallibly be held by that nation which has the best equipment, and has had the longest practice in using it. And this equipment, either in men or material, cannot be improvised on the spur of the moment to meet a sudden emergency. Our strongest rivals on the Continent have for years past been spending large sums ungrudgingly to pay "the price of Admiralty." *Dirigible No. 1*, has shown the way; it is the business of every Englishman to see to it that her successors follow wherever the challenge is raised.



A balloon photograph. Above Chichester.
From the collection of Frank Butler, Esq.