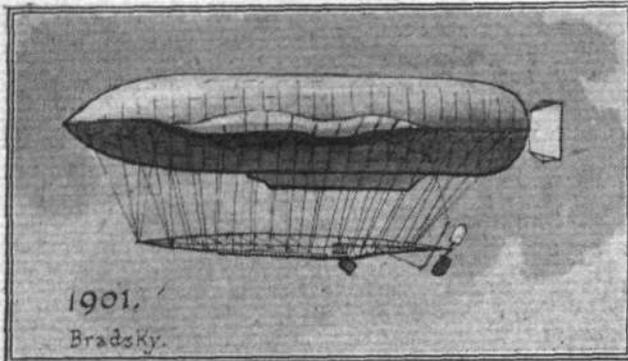


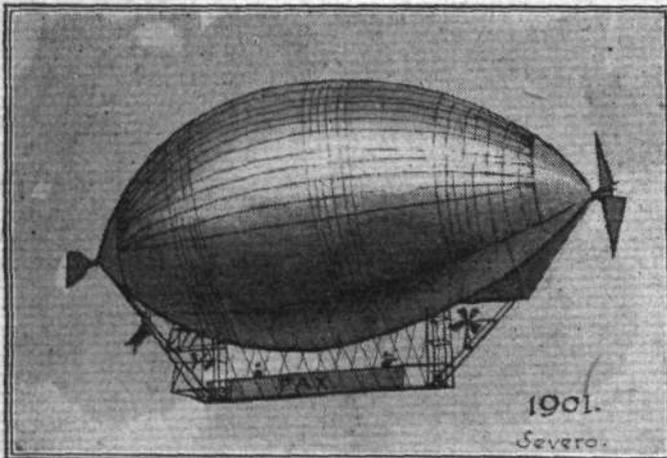
encouraged Santos Dumont to aim still higher, and so it was re-designed, and made its appearance shortly after with a new and larger envelope (109 ft. by 17 ft., capacity, 19,000 cubic ft.), a 12 h.p. Buchet motor, a built-up triangular-section keel of pine, piano-wire suspension, a propeller instead of a tractor screw, and water ballast. In other respects it followed the same general arrangement as No. 4. It was with this ship than an attempt was made to win the Deutsch de la Meurthe prize for a flight round the Eiffel Tower.

A series of accidents, terminating in the destruction of No. 5, however, prevented this feat from being accomplished,



but a few months later the prize was won on No. 6. This ship was an improved No. 5, having a slightly larger capacity, but otherwise possessing the same features. After winning the £4,000 prize, Santos Dumont took No. 6 to Monaco, where he made numerous successful ascents over the Mediterranean, until ballonet trouble brought him down in the sea. In the meantime No. 7, a "racing" dirigible, was under construction. This had a double envelope, 164 ft. by 26 ft., capacity, 44,500 cubic ft. It was fitted with a 60 h.p. water-cooled engine, driving a tractor and a propeller screw situated at the front and rear of the keel respectively. Of the subsequent dirigibles turned out, perhaps the most interesting was No. 9, called the "Little Runabout," as it was the smallest one of the series.

The envelope was egg-shaped, measuring 50 ft. by 18 ft., capacity, 7,770 cubic ft. in its original form; later it was

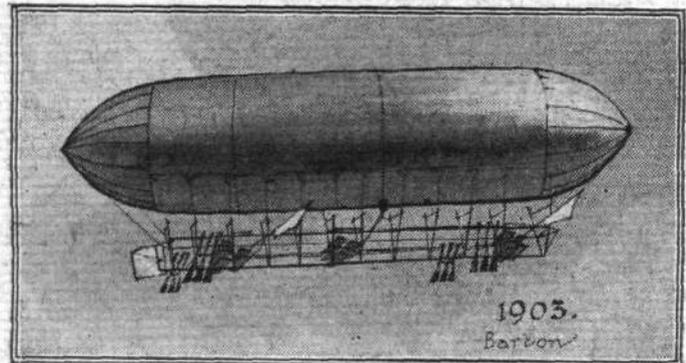


slightly enlarged. The keel, or car, contained a 3½ h.p. Clement motor, driving a propeller at the rear. It was extremely easy to manoeuvre, and had a speed of about 12 m.p.h. No. 10 was a larger model of No. 7, and was called the "Omnibus" on account of it carrying several passengers. Several other airships were also built by M. Santos Dumont after this, all more or less on the same lines, but possessing minor improvements.

### Narrow Escapes of the Kaiser.

APPARENTLY twice recently bombs from the air have narrowly missed putting a period to the Kaiser's life. A message from Zurich states that a train in which he was travelling was recently struck by a bomb and the engine-driver killed. The Berne correspondent of the *Corriere d'Italia* says that a house in which the Kaiser slept during

Before dealing with the twentieth century dirigible—the real, practical airship—reference may be made to four other efforts. In 1901 a French inventor named Roze built an original double airship. It consisted of two cigar-shaped envelopes placed side by side with a framework between carrying the engine, the propeller, and the car. In this way it was supposed that the pitching and rolling of the airship would be entirely eliminated. The trials of the ship, however, proved to be a failure. The following year two experiments, both of which ended in disaster, were made by Augusto Severo, a Brazilian, and Baron Bradsy-Laboun respectively. The former's airship consisted of a spindle-shaped envelope mounted saddle fashion on a large bamboo frame. At the bottom of this frame, below the envelope, was formed the car containing two Buchet motors of 12 and 24 h.p. respectively. The former engine was forward, and drove a tractor screw mounted on the top of the framework in line with the central axis of the envelope. The rear motor drove a propeller similarly mounted. Before the trial took place other propellers had been fitted on the car, but these, together with the two ballonets, were dispensed with at the last moment. An ascent was made from Paris, and about 15 minutes afterwards the expending gas burst the envelope and the machine fell from a height of about 500 ft., Severo and his mechanic being killed. The Bradsy airship had a long cylindrical envelope, 111 ft. long, by 20 ft. diameter. A wooden frame was attached to the envelope equatorially



from nose to stern, and from this frame was suspended the keel or car, which was made of steel tube, and carried a 16 h.p. Buchet motor in the centre. This motor drove a propeller mounted at the rear of the keel. Accompanied by a mechanic the Baron ascended near Paris, but could make no headway against the wind, and when attempting to land the mechanic left his position by the engine and so upset the balance of the airship, causing the car to break away and dash the occupants to the ground.

Finally, in 1904, an Englishman, Dr. A. Barton, built a dirigible of comparatively large dimensions, and containing several interesting features. The envelope was 176 ft. long, by 43 ft. diameter, and contained the usual ballonets. A bamboo framework was attached to the envelope by steel cables. The framework carried two 50 h.p. Buchet motors, with their crank-shafts lying parallel with the keel, and transmitted through gearing and belt the drive to four sets of propellers.

Each set of propellers consisted of three pairs of blades mounted one behind the other, and situated on each side of the car, two forward and two aft. The drive also included large friction clutches, and each engine was under separate control. The horizontal balance of the airship was attained by means of water tanks placed fore and aft, water being transferred from one to the other as required. Elevation was obtained by means of a series of planes mounted at intervals along the framework. The Barton airship was tried at the Alexandra Palace in July, 1905, but did not come up to expectations owing to its imperfect controlability, with the result that it drifted away and was destroyed in landing.

(To be continued.)

his recent visit to the Western front was wrecked by a bomb from a French aeroplane a few minutes after the Kaiser, the Crown Prince and the Staff had left. It adds that practically all the Kaiser's personal effects, including several uniforms, were destroyed, together with a number of important documents, and some of the Kaiser's servants were killed.