and November 6th, 1902, no less than eight nations participated—Austria, France, Germany, Italy, Russia, Spain, Switzerland, and the United States. In October, when the ascents were made in an area of low barometric pressure, the highest altitudes attained by the ballons-sondes were: Strassburg, 13,700 metres, minimum temperature $-51^{\circ}.6\text{C.}$, $5^{\circ}.2$ on the ground. Berlin, 13,930 metres, minimum temperature, $-44^{\circ}.2$ at 9,214 metres, 4° on the ground. On November 6th, when an area of high barometric pressure lay over N.E. and E. Europe, the highest altitudes attained were Chalais-Meudon, 15,612 metres, minimum temperature recorded, $-55^{\circ}.2$, 11° on the ground. Strassburg, 11,300 metres, minimum temperature, $-53^{\circ}.4$, $3^{\circ}.6$ on the ground. Berlin, 12,985 metres, $-52^{\circ}.6$, $1^{\circ}.2$ on the ground.

Aëronautical Nomenclature.—The *New York Herald* mentions that the Permanent International Aëronautical Commission has given its approval to the following terms descriptive of modern varieties of aëronautical apparatus. A non-steerable balloon is called an aërostat; a steerable balloon, an aëronat; an apparatus that is heavier than air is an aëronef, or appareil d'aviation; an aëronef with one or more propellers on an axle which is vertical, or nearly so, is an heliocoptère; an aëronef formed of one or more sustaining planes, with one or more propellers on a horizontal axle, is an aëroplane; an aëronaut propelled by wings is a "mechanical bird."

The Sahara Balloon Experiment.—The attempts of MM. Debureaux and Castillon to send two unmanned balloons across the Sahara from Gabes, in hopes they would indicate the route to be taken by a large balloon carrying passengers, did not prove successful. The first balloon, which was called the "Eclaireur," fell 21 miles from the point of starting, and was lacerated by the Arabs on the borders of the desert. The second, called the "Leo Dex," went 373 miles, and was 26 hours in the air, but was also captured. According to the *Globe*, M. Leo Dex points out that the balloon must have reached the desert 100 leagues south of Gabes, where it would have caught the regular alize winds, and been carried on to Timbuctoo. He estimates that a similar balloon of 1,000 cubic metres, carrying 600 kilogrammes at a time when it came too near the ground, would easily cross the 2,300 kilometres between Gabes and Timbuctoo.

The End of M. Roze's Balloon.—The ignominious fate of M. Roze's airship is a warning to those enthusiastic inventors who form companies to purchase their patents and finance their experiments. Patience is certainly a virtue requisite in all those who are connected with aëronautics, whether commercially or otherwise. Yet it does not seem to have been a distinguishing feature of the company who purchased M. Roze's patents. It appears, in fact, to have treated M. Roze's balloon in much the same manner in which the Arabs treated the experimental pilot balloon in the Sahara. Paris journals have recently stated that on account of the calls made upon this aërial company, the shareholders destroyed both the balloon and its shed.

The Observation Balloon of the Discovery.—It is interesting to hear that the balloon which Commander R. Scott, a member of the Aëronautical Society of Great Britain, took out with him on board the *Discovery*, has been successfully used. It is hoped that further details of its use may shortly be published in this journal.

REVIEWS.

Die Luftschiffahrt der Gegenwart (Aëronautics of to-day), von Hauptmann Hermann Hoernes. A. Hartleben Wien, reviewed by H. Auxilium Bruce.

The name of this book is a depressing reminder that compound words have a way of making a language look rich. Captain Hoernes draws a distinction between "Aëronautik," which he says are "Ballon-technik," and "Luftschiffahrt," which includes "Aviatic," which is "Flugtechnik"; and we cannot follow him in English, for aërostatics does not cover the field.

I don't think Captain Hoernes has read *Macmillan*, and learnt that any influence the Press possesses "is wholly bad." To him it is still a wholesome pulse of the life politic, and if not the fourth power in Europe, it is the descendant of the days of Görres, and the "Rheinischer Merkur," *pace* a reptile press in between; and that the people may understand their own interest in aëronautics and enjoy the daily aëronautical allusions in the papers, he tells us, he has written this book. It is a nice book. I am not going to kill "with faint praise"; it is a very nice book. It is the nicest handbook to aëronautics I have read. It is much better than any of the English popular aëronautical books that have come out lately

he illustrations are not so good as those in an English work that appeared last year, they are higher; but probably that is partly the fault of the paper. And there are a great many more of them, and they are most interesting and much more scientific. The book is scientific as far as it goes, and will keep the man in the street straight. Now our English popular Æronautical books, when they try to be scientific, take the man in the street into a fog. Captain Hoernes is very generous to other nations in his estimate of their work. Perhaps it seems a *petitesse* to even say this when speaking of the work of a scientist, for who are the cosmopolitans if they are not? But, as I said the author thought so much of the press, I should like to add that in spite of German papers of to-day, he is left a truth-loving, fair-minded Austrian.

Captain Hoernes devotes four pages to wind-resistance, divided into general, experiments, results, and deductions from the laws of wind-resistance—a very necessary beginning to an Æronautical handbook, and one which English Æronautical writers might well adopt. Four pages do not seem much, perhaps, for a subject which is the crux of the problem, but the author tells us where more can be found, if wanted, in other of his more technical works.

In the chapter on "Steerable Balloons," Captain Hoernes emphasises that on economical grounds such balloons can never be in general use for traffic, and that, to be of use for sporting, military, and scientific purposes, they must attain at least a speed of fourteen metres per second, able to be maintained for three consecutive hours. As usual, he estimates the value of a steerable balloon by its speed of travel; but the measurement of the actual wind-force overcome recommends itself as a more convincing all-round measure of capacity; it is another way of expressing the same thing, but the *varying pressures* to be combated in going against wind give the results more weight. Of course, to get such measurements, the difficulties of location have to be overcome; but these can be overcome, and the results are much more convincing.

There is a well illustrated section on kites and meteorology, that most satisfying modern development of Æronautics. But it seems a pity such a good kite as that of Mr. Cody should have escaped notice, also that of Mr. Dines, which has done much quite late meteorological work, and that of Mr. Anderson, which is now on board the *Scotia*, with Mr. W. Bruce's Antarctic Expedition.

By the way, I am curious to know how the Germans really like their new spelling? What do they feel when they see *Thatsache* written without an "h"? When I read it, I feel hurt in the eyes as when an American writes me colour without the "u." But I understand that missing out the "u" in colour saves thousands of dollars a year in American printing expenses, so there is nothing more to be said, though I should like to rebel and be uneasy beneath the Almighty Dollar.

Foreign Æronautical Periodicals.

(In this list a selection of some of the more notable articles is given.)

L'ÆRONAUTE (Paris).

January, 1903.—Cinquantenaire de la première ascension d'un dirigéable, par L. Giffard. Rapport de M. Cassé.

February.—Analyse et synthèse du planiment appliquées au ballon dirigéable, par Berthenson.

L'ÆÉROPHILE (Paris).

January, 1903.—La Déviation Maritime; Geo—La Traversée du Sahara par Ballon Pilotes; Georges Blanchet—Inauguration d'un Monument à Henri Giffard; Marius Degoul.

ILLUSTRIRTE AËRONAUTISCHE MITTHEILUNGEN (Strassburg).

January, 1903.—Die Katastrophe Bradsky. Die Aichung des Elektronen—Aspirationsapparates, von Dr. Herman Ebert.

February.—Ueber die Ursachen des Unfalls des Luftschiffes, von Severo, von G. Espitalier.—Die Durchquerung der Sahara Mittelst Ballon Schlepp-Fahrt.

March.—Leo Stevens und sein Selbstfahrendes Ballon—Der Ballon Lebaudy, von G. Espitalier.

WIENER LUFTSCHIFFER-ZEITUNG (Vienna).

January, 1903.—Wilfred de Fonvielle—Herausgegeben neue Flugmaschine.

February, 1903.—Gummi und Luftballon.—Historisches über des Schleppseil—Mytton Flugexperimente.

March.—Der Stand der Flugtechnik, 1902. James Glaisher.—Von Paris nach Ungar. Versuche mit Tragschrauben; Raimund Niefuhr—Die Endgültige Lösung des Flugproblems.