Finally we come to the "machines a explosion," or balloons propelled by gas engines. Paul Haenlein in 1865 was the pioneer of this type, although he seems to have had no practical success. The German machines of Woelfert, Schwartz, and the first Zeppelin are in turn described, though each of them proved failures. The various vessels of Santos Dumont next claim attention, especially his much-lauded trip round the Eiffel Tower. More failures and catastrophes followed with Rose, Severo, and De Bradsky, and then came the successful essays of the Lebaudys. The history of this type of airship is fully gone into, from the first trials up to the unfortunate escape of the *Patrie*.

Then follow descriptions of the other French dirigibles, the *Ville de Paris*, and that of Count de la Vaulx.

The modern airships of other countries are disposed of in a few pages. The Zeppelin No. 3 is shortly described, but its better-known successor, which has since made its *début* and taken its *congé*, is referred to in the final pages of the book. Having described the Polar explorations by balloon at some length, the authors give a chapter on aëroplanes. The latter can hardly be called up to date, since progress has been so rapid during the last year or two. It is almost amusing to read of M. Farman's record performance of remaining in the air for $52\frac{3}{5}$ seconds when to-day we think nothing of Mr. Wright flying for more than an hour with a passenger. In these circumstances of kaleidoscopic changes it seems impossible to bring out a book on aëronautics which shall be really up-to-date, but the one before us is a good little history which is fairly trustworthy, though it is not detailed enough to be classed as a technical text-book.

An English Holiday with Car and Camera. By James John Hissey. Pp. xviii+426; with 28 full-page illustrations and a map of the route. (London: Macmillan and Co., Ltd., 1908.) Price 10*s*. net.

IT was scarcely necessary for Mr. Hissey to tell us, as he does in his preface, that he travels purely for pleasure and "in search of the picturesque." Those readers who know the author's many pleasant, gossipy books about English by-ways have long been aware, from the optimistic way in which rural England is described, that Mr. Hissey loves exploring his native land. This time the journey taken by the author and his wife was confined to motoring in the country south of a line joining the Wash to the Bristol Channel. The account of the wanderings, with its many glimpses of the home-life of the country people, and the excellent illustrations, combine to make a very interesting volume.

Pearls and Parasites. By A. E. Shipley, F.R.S. Pp. xv+232; with illustrations. (London: John Murray, 1908.) Price 7*s*. 6*d*. net.

THE title of Mr. Shipley's book scarcely serves to indicate the general character of the contents. The volume contains nine essays, which, with one exception, deal with problems of economic zoology. The subjects introduced vary considerably among themselves, as the following titles show:—Pearls and Parasites; the Depths of the Sea; British Sea-fisheries; Zebras, Horses, and Hybrids; Pasteur; Malaria; "Infinite Torment of Flies"; and the Danger of Flies. The concluding essay is an inquiry into the aims and finance of Cambridge University. Most of the essays have appeared previously in periodicals, and have been read by many people interested in science. The subjects discussed are sufficiently important to attract the scientific as well as the general reader.

Architectural Education. By Wilfrid I. Travers. Pp. vii+119. (London: Harrison, Jehring and Co., 1908.) Price 4*s*. net.

THE subtitle of this book indicates its character with fair precision; it runs:—"A history of the past and some criticisms of the present system, upon which are founded some suggestions for the future, with particular reference to the position of the universities." Mr. Travers has collected much information as to the courses of training for architects and the syllabuses of the examinations conducted by the Royal Institute of British Architects and many universities, and also offers useful suggestions for their improvement. Many of the schemes of work here tabulated appear to give little prominence to the training in the principles of science which are necessary for an architect to ensure successful work.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

A Suggested Explanation of the High Velocities of Gases observed on the Solar Surface.

THE important discovery by Prof. Hale of the Zeeman effect in sun-spot spectra proves the presence of extensive areas on the solar surface in which ions of one kind largely preponderate. This suggests the solution of one great difficulty which has blocked the way in the attempts that have been made to explain the very high velocities which are not unfrequently observed near the solar surface by spectroscopic and other means. For there is a limit to the velocity of a gas impelled by pressure only, this being the velocity with which it streams from a high pressure into a vacuum, and we may put this limiting velocity to be equal to that of propagation of sound in the gas. Observation shows that the highest velocities observed on the solar surface are about 200 times as great as the velocity of sound in hydrogen at the temperature of freezing water.

If, then, these masses of moving matter are impelled by pressure only, the number expressing their absolute temperature divided by the density must be 40,000 times greater than the corresponding number in the case of hydrogen at 0° C. Taking the absolute temperature of the sun to be forty times as great as that of freezing water (which cannot be far from the truth), the observed velocities would become consistent with our supposition of pressure-motion only if the density of the gas were a thousand times less than that of hydrogen. This brings us down to the mass of the negative electron. As, however, spectroscopic evidence indicates the motion of ponderable matter (principally, if not solely, composed of hydrogen), we must assume that gases are entangled in the rush of electrons, but not to a sufficient degree to alter the average density materially. In the case of matter in which one kind of electrons preponderate, electric forces may, of course, increase the velocities almost to any extent, but the close agreement of the observed high velocities with the limiting velocity in a gas, having a density equal to the thousandth part of that of hydrogen, and being at a temperature agreeing, so far as we can tell, with that of the solar surface, is highly suggestive. I conclude, therefore, that if the observed velocities are real—and there is good ground for believing them to be so—the prominences and other appearances in which velocities of more than about 10 kilometres a second are observed are composed to a preponderating extent of electrons in which gases are entangled to a sufficient degree to give the spectroscopic test, but not sufficiently to alter materially the average density.

In conclusion, I should like to urge a word of caution