OUR BOOK SHELF.

Grundriss der Psychologie. By Wilhelm Wundt. Pp. xvi + 392. (Leipzig: Wm. Engelmann, 1896.)

THIS is the third book on psychology which Prof. Wundt has written, and its special aim is to give an account of the general principles of the science apart from physiological considerations on the one hand, and philosophical on the other. Technical details are to a large extent omitted, the reader being referred for them to the "Grundzüge der physiologischen Psychologie." The book resembles in many respects Külpe's "Outlines," and it seems as if the author intended it to correct the departures from the Wundtian standpoint which are to be found in the latter. A novel feature of the book is the description of ideas, emotions and volitions as psychical structures ("Gebilde"), with the reservation, however, that both the structure and the elements of which they are composed are to be regarded as processes and not as objects. After considering psychical elements and "Gebilde," the subjects of consciousness and attention, association and apperception take up a third section; the fourth section treats of mental development in the animal and the child, and the book concludes with the formulation of certain laws of psychical causality.

Cours de Physique de l'École Polytechnique. By M. J. Jamin. *Premier Supplément.* By M. Bouty. Pp. 182. (Paris: Gauthier-Villars et Fils, 1896.)

THIS supplement to the latest edition of the "Cours de Physique" of Jamin and Bouty, deals with progress in heat, acoustics, and optics. It is not intended to be a complete account of work done in these three sections of physical science, but a description of investigations which have led to definite results likely to survive for some years. In the section on heat, the work described is concerned with the measurement of temperature, principles of thermodynamics, changes of state, dissociation, osmotic pressure, critical points, and capillary phenomena. In the section on acoustics and optics, the subjects of the chapters are: propagation of vibratory movements, propagation of sound, study of vibrations, propagation of light, and diffraction, interference phenomena and their applications. Students of physics will find the volume useful for consultation, especially as references are always given to the papers abstracted.

Les Rayons X, et la Photographie a travers les Corps Opaques. By Dr. C. E. Guillaume. Pp. viii + 127. (Paris: Gauthier-Villars et Fils, 1896.)

THIS is the fullest and most scientific account we have seen of work with X-rays, and the investigations which led up to Röntgen's discovery. The first part of the book contains a general account of the kinetic theory of gases and the nature of light, together with a few particulars with reference to electric discharges in gases. These facts, and the statement of the theories upon which they depend, prepare the way for a concise description of researches on the luminous phenomena exhibited by electric discharges in rarefied gases, from the times of Faraday and Hittorf until now, especial attention being given to the bearings of these investigations upon the nature of kathode rays. Röntgen's discovery, and many of the researches to which it has given rise, together with an account of its applications, make up the remainder of the volume. Most of the results described have appeared in the *Comptes rendus* of the Paris Academy of Science, or in NATURE, and Dr. Guillaume has now brought them together in a handy form. Having regard to the large amount of work still in progress, the volume can hardly be considered as permanent in its present shape; but when the proper time arrives, it may be expanded, and will then make a handbook well worth a place in scientific libraries.

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.*]

Blood-Brotherhood.

THIS very ancient custom, performed in so many ways, and still practised by all barbarous and semi-barbarous peoples, might, by the help of modern science, be turned to useful and beneficent ends. For some time I have thought, and the conviction grows on me, that residents and travellers in tropical parts of the world might the better withstand the climate, malaria and fevers to which they often succumb, by entering into blood-brotherhood with a healthy native.

The classical researches of Pasteur and his disciples have shown how various diseases may be controlled, and immunity secured to man and the lower animals, by the proper use of antitoxins, and by diluted subcutaneous injections of virus in certain cases of blood-poisoning. Although not parallel in specific aim, blood-brotherhood may be found to possess similar prophylactic properties. Is it not probable that a European inoculated with the blood or serum of a native, would be better able to resist the climatic changes to which he is subjected in tropical countries? In other words, would blood-inoculation not set up in his system those changes necessary to adapt him to the climate, and render him immune to the diseases which are the result of climate? The suggestion is based on the assumption that the native is more healthy in his own climate than any foreigner can be, and that blood-inoculation would acclimatise the latter at once.

The advantages to be derived from such a system are obvious. Only strong, healthy persons can long withstand the climate of Central Africa. Many missionaries and pioneers are annually sacrificed to it. Men certified by medical practitioners as sound in lung and limb at home, are weakened and prostrated there. A recent example of great loss of life due to climate was that of the French expedition to Madagascar, where the army was decimated from this cause. And another noted example is that of the late lamented Prince Henry of Battenberg, who died on his way to Ashantee of a disease brought on by climatic change.

I have referred to the writings of African travellers for information on the effect on the system of blood-brotherhood, without positive result. No one seems to have suffered by it. Livingstone, Grant and Cameron mention the custom, and all of them entered into it in the person of one of their attendants. Perhaps they feared the consequences on themselves, but no explanation is given. Stanley is the only traveller whom I have been able to find entered into blood-brotherhood in person. At first he, too, seems to have done so by proxy, but afterwards he took part in it fearlessly, and underwent the operation fifty times! So that Trumbull ("The Blood Covenant," p. 38) is justified in saying that "the blood of a fair proportion of all the first families of Equatorial Africa now courses in Stanley's veins." We have not been told that Stanley suffered in any way from these inoculations. We may therefore conclude with a fair degree of reason that his healthiness (on the whole), endurance and success, was attributable in some measure to the exchange of blood with the natives he met.

Blood-brotherhood as practised in Central Africa varies in detail, and is accompanied by many formalities; but the essential part of the process, as described by Cameron ("Across Africa," p. 333) consists in "making an incision on each of the right wrists, just sufficient to draw blood, a little of which is scraped off and smeared on the others cut." In many cases the blood wasted is considerable, but the science of to-day does not demand this. It would only be necessary to use a small quantity, perhaps not more than the quantity of lymph required in small-pox inoculation. And it would be easy to get healthy natives at the port of debarkation, willing, for a small remuneration, to supply the necessary blood or serum. The operation might prove invaluable to persons joining the Civil or other Service in India or the colonies, to missionaries appointed to tropical countries—and, in fact, to all persons requiring to travel or reside in hot or unhealthy climates. It might also be found of value were the circumstances reversed—that is to say, with the natives of hot climates coming to reside in this country, or with persons electing to reside at home after long residence abroad.

Experiments conducted in the direction I have indicated, would, I believe, result in the acquisition of much useful and