

primeval structure and have undergone only slight modification, the other, to which the author belongs, believing that land and sea have changed places at various geological periods. The latter view, he considers, is upheld by a consideration of the distribution of geological formations on both sides of the North Atlantic.

A detailed description is then given of the submerged river-valleys occurring off western Europe and Africa and in the Mediterranean as traced from the soundings shown on the charts. These were formed not only by rivers, the greater part of the course of which is visible on land, such as the Loire and the Congo, but also by rivers which rose on land now completely submerged, such as the "Irish Channel River" and the "English Channel River." They all indicate a former great uplift of land. The Norwegian fjords also are regarded as river-valleys of great geological age.

Professor Spencer shows that the continental shelf off the east coast of America is likewise cut up by submarine river-valleys and that there was a land connection between the West Indies and the American continent, and he upholds the view that great changes of level, amounting in some cases to thousands of feet, have taken place in recent geological times.

In the final chapter Prof. Hull gives his explanation of the cause of the Glacial Period. As shown from a study of the submerged river-valleys, a general elevation of the earth's crust took place all round the North Atlantic, the date of which is concluded to be about the close of the Tertiary Period. This brought about a much colder climate and at the same time a great change in the direction and temperature of the Gulf Stream. When the Antilles were directly connected with the American continent this current could not enter the Caribbean Sea, where at present it gains about 13° Fahrenheit of temperature; hence arose an additional cause for decreased temperature along all the coasts of the North Atlantic. The combined effect of these two factors, viz., the increased elevation of land on both sides of the Atlantic and the decrease of temperature in the Gulf Stream, would be sufficient, the author considers, to call into existence a rigorous glacial climate over the northern parts of America and Europe, which in its turn would affect a great part of the rest of Europe and western Asia, and more or less the entire northern hemisphere. Thus Dr. Hull shows that he belongs to those who regard purely terrestrial factors as the cause of the Glacial Period, in contrast to those who explain it on an astronomical basis. The book is useful to all who are interested in physical geography, whether they can agree with Dr. Hull's conclusions or not.

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OUR BOOKSHELF.

The Elements of Statistical Method. By Willford I. King. Pp. xvii + 250. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1912.) Price 6s. 6d. net.

IN this volume Mr. King has endeavoured "to furnish a simple text in statistical method for the benefit of those students, economists, administrative officials, writers, or other members of the educated public who desire a general knowledge of the more elementary processes involved in the scientific study, analysis, and use of large masses of statistical data." After a brief historical introduction, he outlines the uses and sources of statistical data, and then gives a few short chapters on "the gathering of material"; the third part, forming the bulk of the book, deals with "analysis," i.e., tabulation, averages, dispersion, correlation, and so forth.

The writing of a satisfactory elementary work on such a subject—a work that can be placed in the hands of the junior student with confidence that he will not have to unlearn at a later stage some of the notions that he has gathered—is an exceedingly difficult feat, much more difficult in many respects than the writing of a work for more advanced students, and we cannot say that, in our opinion, Mr. King has altogether succeeded. The style is simple enough, but some matters are very insufficiently explained—probable errors, for example—and in other cases, notably in the chapters dealing with correlation, extensive revision and correction are required. A coefficient "of concurrent deviations" suggested on p. 208 does not fulfil the fundamental condition of becoming equal to zero if the deviations are independent. The student, in dealing with correlation, is repeatedly told to divide deviations by the mean, and the graph of regression obtained when the deviations have been divided by their respective means is termed the "Galton graph." What Sir Francis Galton did was to divide deviations by their respective quartile deviations—not their means—and he obtained the correlation coefficient graphically in that way. The relation of regression to correlation is never clearly exhibited, and Mr. King's use of the term is not in accordance with general usage. As it at present stands, the book cannot be recommended as a completely trustworthy guide.

Anthropologie Anatomique. Crâne—Face—Tête sur le Vivant. By Dr. Georges Paul-Boncour. Pp. xix + 396. (Paris: Octave Doin et Fils, 1912.) Price 5 francs. (Encyclopédie Scientifique.)

THE enterprising publishers of the "Encyclopédie Scientifique" have arranged for the issue of a series of forty-eight volumes dealing with anthropology, the editorship of the series being assigned to Prof. Papillault, of l'cole d'Anthropologie, Paris. This volume, by Dr. Georges Paul-Boncour, forms the first of the series, and if its successors maintain an equally high standard, the "Bibliothèque d'Anthropologie" is destined to become a standard work.