

Movements of gravity and deviations from the vertical, as carried out by the Geodetic Survey of India during the last two decades, give some support to the main facts of Isostasy by indicating that the principal relief features of India are in a large measure compensated, though many discrepancies still remain to be explained.

To what extent are the Himalayas compensated? Observations at a number of stations in the midst of the Himalayas enable us to say that there is a defect of compensation in the outer foot-hills, known as the Sub-Himalayan zone; in other words, this area is undercompensated and one of surface overload. This defect increases in amount until, according to Oldham, "at some 50 miles from the edge of the hills it reaches an equivalent to an overload of about 2,000 feet of rock". In the interior of the Himalayas in the central ranges there is, on the other hand, over-compensation, that is, mountain material is in defect, due perhaps to excessive erosion by rain and rivers, while the

underground density at the root of the mountains is of a high order.

If these facts ultimately prove to be well-established, the question of the origin of mountain ranges would appear to be largely dependent on the provision of an underground belt of rocks of excessive specific gravity. The primary factor in mountain-building would thus be not the formation of a deep geosynclinal trough with its pile of sediments, but the changes in underground mechanics bringing about movements in the denser basaltic layers under the sub-crust.

It appears from a consideration of isostatic facts and the data from gravity investigations that, on the whole, India is an area of defective density of mass. Gravity in India is in deficit in spite of all the height, bulk and weight the Himalayas have given to it, and it needs a thick stratum of rock, somewhere about 600 feet thick, spread over the entire surface of the country to counterbalance this deficit of mass.

The Sex Ratio.*

"THE subject of the numerical proportions of the sexes in a population is of such obvious interest to the naturalist, the sociologist, the economist amongst others, that it is not surprising to find that to it considerable attention has been paid, but so complicated are the problems that cluster round it that even yet our understanding of the significance of the sex ratio is still very incomplete." Darwin (1871) wrote: "I formerly thought that when a tendency to produce the two sexes in equal numbers was an advantage to the species it would follow from natural selection, but I now see that the whole problem is so intricate that it is safer to leave its solution for the future." Prof. Crew, in view of the recent developments in cyto-genetics, which have removed many of the difficulties that surrounded the subject in Darwin's time, has re-examined the problem in great detail. In the case of the human beings, after analysing the figures available, he finds that "to be born is a more dangerous adventure for the male than for the female, and that there is a sexually selective mortality which not only operates at all ages after birth to the disadvantage of the male, but which acts and possibly equally strongly pre-natally as well. The expectation of life at all ages is greater in the case of the female of the species, and the true recipe for longevity is to be born a girl." After dealing with the application of the metabolic

theory and the alternative sex-linked lethal theory to man he examines at some length the application of these theories to other animals, such as mammals, birds and insects, and concludes that "It is thus possible to look upon the inequality in capacity for continued life between the sexes as being partly of the nature of an evolutionary oversight due to a lag in the development of a harmonious relationship between the mechanisms of mutation and heterogamety. But this disharmony has been repaired by the invention of a supplementary device which can provide a compensatory primary sex ratio, high in those species with male heterogamety, low in those in which the heterogametic sex is the female."

In his Address, Prof. Crew has presented evidence to show that three possible causes of sex differences in mortality have to be considered: (1) "sex-linked lethals, (2) sex limitation of defects and derangements, and (3) sex-dimorphic physiological and endocrinological differences." He is of the opinion that probably "sex-linked lethals play only a minor part and that the defects and derangements that have come to be manifested only or more completely in the male owing to his relative unimportance in respect of propagation, constitute the major cause". In the Address he tries to reconcile the views of the geneticists and of the physiologists and is of the opinion that the problem of the human sex ratio must be studied not only by the statisticians but also by the experimental biologists both in the laboratory and in the open country.

* Summary of the Presidential Address of Prof. F. A. E. Crew, D.Sc. Zoology Section, British Association for the Advancement of Science, Nottingham, 1937.