Himalayan region. The possibilities of the biogeographic vista of remote antiquity opened up to us by the existence of Antarctica are enormous, and quite equal to the task of explaining the many hitherto perplexing problems of bio-distribution present and past.

It remains to establish the existence of the former contacts of Antarctica with the southern continents during times past, and the duration of those several contacts until the last one was severed and the present complete isolation of the continent effected. Such contacts are indicated by a study of the faunæ of to-day. Their former existence may be established by the determination of epicontinental seas, continental platforms and submerged ridges, in and about the regions in question. Their duration may be revealed by a study of the geological history of organisms coupled with that of present-day biogeography. We may look forward with the liveliest interest to the much-to-be-desired paleontologic results which should be forthcoming from the further south polar expeditions now outfitting. Certainly here is the field for fruitful investigation of the phylogeny of late and early forms of life, can one but withstand the rigors of its present climate.

It would now appear that the question of the one-time existence of the fabled continent Gondwana, furnishing an east-and-west connection between South America, Africa and Australia, may be relegated to oblivion; the more decidedly so in view of the quite certainly established permanence throughout geologic time of the present ocean basins. Antarctica is doubtless the real Gondwana, but in another quarter—the southern!

CHARLES H. T. TOWNSEND

PIURA, PERU,
July 4, 1910

THE INFLUENCE OF NUTRITION UPON THE ANIMAL FORM

THE above-named paper by H. J. Waters, presented at the thirtieth meeting of the Society for the Promotion of Agricultural Science, is reviewed because it appeared in an agricultural publication and may not otherwise come to the attention of the experimental morphologist and others to whom it may be of considerable interest. Mr. Waters reports some experiments that were made at the Agricultural College of the University of Missouri. A number of young beef steers were kept during the growth period on different planes of nutrition. One group were fed so as to allow a gradual increase in weight (supramaintenance); a second group were so fed that they kept a constant weight (maintenance); a third group were fed so that they gradually lost weight (submaintenance). The animals were measured carefully at regular intervals during the experiment. The results show that even in the submaintenance animals the skeleton continues to grow for a long time, but its growth is retarded and after several months checked completely. The point of greatest interest is the disproportionate growth of the skeleton in the underfed animals. The ratio of the total increase in the width of the hips to the total increase in height at the withers during the entire experiment is approximately as follows: in the supramaintenance group, 1:2; in the maintenance group, 1:3, in the submaintenance group, 1:5. Underfeeding retards the increase in the width of the skeleton at the hips much more than it retards its increase in height. In other words the skeleton of a beef steer grows much wider in proportion to its height when the animal is well fed than when it is poorly fed. The author is inclined to attribute the expansion of the skeleton typically seen in beef cattle to the continuous pressure of the distended alimentary canal.

It is interesting to note that the ancestral type, from which the modern beef animal has been derived, corresponds in the shape of the skeleton to the underfed animals described above. Stockmen have insisted for many years that the best bred beef animals, when kept under range conditions, will assume in a few generations what is commonly known as the "sun-fish" type, or an approximation to the ancestral type. The narrowing of the skeleton in response to an inadequate food supply may be a physiological adaptation, or it may be a case of reversion. E. T. BELL