tissue. Biological tests have so far given somewhat inconclusive results as to whether the titre is due wholly to vitamin C. The freshly excised sarcoma (rendered available by the collaboration of Mrs. B. Holmes) was fed to a series of five guinea pigs in curative tests at the level of 3·5 gm. per day. If the indophenol titre were due *entirely* to vitamin C, 2·5 gm. per day would suffice as the minimal dose. However, the experimental animals receiving 3·5 gm. lost weight as rapidly and survived no longer than the negative controls, although at death the degree of scurvy appeared less severe. In such tests a complicating factor due to the possible toxic effect of relatively large amounts of animal tissue fed to a herbivorous species like the guinea pig has always to be borne in mind. Further assays by several alternative methods are in progress. In any case the presence in the tumour tissue of such high concentrations of an intensely reducing substance, hitherto unrecognised, seems of special significance, bearing in mind the distinctive character of the cell respiration of tumours. Furthermore, observations in another connexion with Dr. E. W. Fish seem to indicate that vitamin C is needed primarily for the maintenance of certain actively functioning cells, so that its apparent presence in tumour tissue seems additionally suggestive. It is proposed to investigate the effect of deprivation of vitamin C on tumour growth.

Returning to the question of the applicability of the chemical test, it may be concluded that, on all fours with the now well-known and extensively used antimony trichloride test for vitamin A, it furnishes a valuable if not absolutely infallible guide. Certainly for fruits and vegetables as ordinarily dealt with, the test seems to give perfectly reliable results without further elaboration; when unusual types of material are under investigation, the test must be used with due understanding.

Nutritional Laboratory, Cambridge.
June 20.
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[2] L. J. Harris and S. N. Ray, *Biochem. J.*, **27**, 303; 1933.
[3] T. W. Birch, L. J. Harris and S. N. Ray, *Biochem. J.*, **27**, 590; 1933.
[4] A. L. Bacharach, private communication.
[5] L. J. Harris and S. N. Ray, *Biochem. J.*, **26**, 2067; 1932.
[6] T. W. Birch and W. J. Dann, NATURE, **131**, 469, April 1, 1933.
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[8] E. Boyland, private communication; *Biochem. J.*, in the press.

The Rise of the Himalaya

DURING the present Mount Everest Expedition, I have had the opportunity of travelling through the Central Himalaya and over part of the Tibetan plateau. The remarkable way in which certain rivers, for example, the Arun, rise in the Ladak Range about 20,000 ft. high, and then flow southwards through the considerably higher main range of the Himalaya, has been commented upon by H. H. Hayden, A. M. Heron, N. E. Odell and others; and the phenomenon has been explained either as the result of the cutting back by the rapid Himalayan torrents until they eventually captured east-to-west flowing Tibetan rivers, or as the result of the rise of the Himalaya subsequent to the establishment of the present drainage system. A method is here given which seems to make it possible to decide between these alternatives, and to distinguish two distinct phases in the formation of the Himalaya.

With the help of the existing maps, the average height of the Tibetan plateau to the north of Sikkim may be estimated as about 16,000 ft. In the part of Sikkim lying between lat. 27° 30′ N. and 28° 0′ N. (which includes Kangchenjunga 28,146 ft. and the Teesta valley, so low as 4,000 ft.), an estimation of the volume of the country lying above 15,500 ft. has shown that it equals the volume of the valleys below 15,500 ft. From the point of view, therefore, of the general isostatic conditions of the earth's crust, this region of High Himalaya is equivalent to the extension of the plateau of Tibet over the same area.

Some time ago, Fridtjof Nansen showed theoretically that the cutting of valleys in a plateau that is in isostatic adjustment will at first cause a rise in the general level of the district. The preliminary estimation given above suggests with considerable probability, that the rise of the Central Himalaya to its present height has been the result of rivers cutting their valleys into the edge of the Tibetan plateau, which formerly extended farther southward. There is ample evidence to show that the usual compressional mountain-building movements were responsible for the initial high plateau; but the further uplift giving the well-defined Himalayan range appears to have been a vertical uplift due to isostasy.

The close association of Mount Everest with the deeply cut gorges of the Arun River is thus probably no mere coincidence; the Everest group would seem to have risen to its present height after the establishment of the Arun River and as a direct result of the excavation of the Arun and adjacent valleys in an isostatically adjusted part of the earth's crust.

It would be of great value if a future expedition to this region could carry a light apparatus for the determination of gravity, and thus attempt to discover the extent to which this part of the crust is in isostatic adjustment.

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Mount Everest Expedition
Base Camp, Tibet.
April 25.

Solar Radiation and Planetary Atmospheres

I ADMIT that I have asserted too absolutely the principle that for a radiating planet fed by radiation from the sun, the relative change of equilibrium temperature (namely $\delta T/T$) of the planet is of about the same order as that of the sun which is its cause. This assumes that dynamical processes in a blanketing atmosphere overlying the planet are not in control. All such effects, whether upward or downward, are superficial: the annual variation of temperature is no longer sensible thirty feet underground: and an ice age lasting 10,000 years could not be felt at $\sqrt{}$ 10,000 times this depth, which is about half a mile. Astronomers see down to the surface features of the planet Mars, so that there cannot be much of an atmosphere, though I observe that Dr. Simpson[1] discovers a different reason in the low temperatures (ranging from 10° C. to −70° C.). On the other hand Venus, which is subject to radiation nearly twice as intense as the earth, is entirely covered with cloud, so that inhabitants below exist in a leaden atmosphere scarcely conscious of the sun: and if the cloudy shield presents a bright surface to the incident radiation, sending most