

near the earth, would be responsible for the fact that the readjustment of the earth's crust after a large portion had been removed in the course of the formation of the moon was mainly effected in an east and west direction.

In these circumstances the excessive meridional folding which Prof. Chamberlin postulates as a necessary result of tidal retardation could not be looked for.

The chief value of the formulation of a speculative hypothesis such as I have sketched out is in illustrating and emphasising the interest and importance of detailed study of geological structures, region by region and period by period, throughout the world. It will only be when we have all the facts before us, that we shall be able to solve with any assurance the problems presented by the present configuration of the surface of the globe.

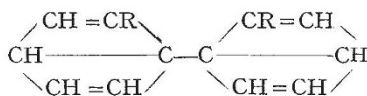
With regard to the use of the words "rift" and "rift-valley," the latter was originally and properly used by Prof. J. W. Gregory for a structural valley due essentially to tension, and I use "rift" in the corresponding sense—of a split in the earth's crust due likewise to tension. This is in close accordance with the popular and literary use of the word "rift." Should at any future time it be clearly proved that the "great rift valley" was never in the whole course of its existence associated with east and west tension, it would then, I submit, have no longer a right to the title.

JOHN W. EVANS.

Imperial College of Science and Technology,
South Kensington, S.W.7,
August 31.

Stereoisomerism among Derivatives of Diphenyl.

THE cases of isomerism so far recorded among derivatives of diphenyl, whether connected with optical activity or not (Kenner and co-workers, *Trans. Chem. Soc.*, 1922, 121, 614, etc.), are interesting from the point of view of the possibility of the existence of a stable para-bond in benzene and, more particularly, in diphenyl derivatives. Thus, any 2:2'-derivative of diphenyl should be capable of optical activity on the basis of the general formula:



which reveals the presence of four asymmetric carbon atoms.

From the same point of view, the isomeric dinitrobenzidines (cf. for example, Brady and McHugh, *Trans. Chem. Soc.*, 1923, 123, 2047), and some of the substances derived from them, also contain four asymmetric carbon atoms, although this type does not include cases of optically active substances at present.

The above suggestion opens up a large field for investigation. It is interesting to note, in passing, that diphenyl forms a tetra-ozonide, which may indicate that the para-bonded condition is favoured even by the parent hydrocarbon. E. E. TURNER.

East London College,
Mile End Road, E.1,
September 4.

The Liesegang Phenomenon—an Historical Note.

THE discovery of the phenomenon of periodic stratification in gels is attributed to Liesegang (*Phot. Archiv*, 1896, 221). Historical accounts of earlier

experimental work on the formation of precipitates of sparingly soluble substances in gels are given by Wo. Ostwald ("Grundriss der Kolloidchemie," Dresden, 1909, 208) and by Bradford (*Biochemical Journal*, 29, 29, 1920). The latter author states (*loc. cit.*, p. 29): "The first observation of a series of layers (produced by periodic precipitation in gels) must be ascribed to Lupton (*NATURE*, 47, 13 (1892))." It may be observed that Ord published experiments before this date on the formation of calcium oxalate in isinglass gels. Details of these experiments are given in his book ("The influence of Colloids upon Crystalline Form and Cohesion," London, 1879), which, in the writer's opinion, has not received the attention it deserves. It appears from the passage quoted below (*op. cit.*, p. 108) that Ord before 1879 (the actual date of the experiment is given in the text as March 12, 1869) had obtained stratified precipitates of calcium oxalate:

"The deposit (of calcium oxalate) was not uniform, but somewhat stratified, forming a layer of greatest density near the calcium solution, a layer of less density, with some opalescence, near the oxalic solution, and several intermediate layers of still less density, with alternate spaces of extreme scantiness of deposit."

In the light of these facts it seems that the priority of the discovery should be taken by Ord.

J. R. I. HEPBURN.

119 Richmond Road, London, N.1,
August 18.

Urease as a Product of *Bacterium radiculicola*.

THE letter by Prof. Werner in *NATURE* of August 11 "On the Presence of Urease in the Nodules of the Roots of the Leguminous Plants," induces me to state that urease is also produced by the pure cultures of *Bacterium radiculicola*, and much more profusely than by the nodules. Such forms as *Vicia*, *Trifolii*, *Pisi*, are particularly strong in this respect, while *Ornithopodis* and *Lupini* are but feeble urease-producers.

It is interesting to observe that urease is also, in certain cases, a product of the normal papilionaceous plants, first discovered by Takeuchi in the beans of *Soja hispida*, and by me in the seeds and the rind of the branches of *Cytisus Laburnum* and *Glycine chinensis*.

The simplest way for the demonstration of the enzyme is the plate-method which I have described in *Centralblatt f. Bakteriologie*, 2te Abt., Bd. 5, p. 323, 1893, and *Archives Néerlandaises*, 1895. As, however, *B. radiculicola* does not grow well on broth-gelatin, or yeast-decoct-gelatin with 1½ per cent. urea, the detection of the enzyme must be made with material taken from colonies previously grown on peas-leaf-gelatin, with 2 per cent. cane-sugar, and then used as little lumps, placed on the yeast-decoct-urea-gelatin plate. After a few minutes the beautiful "iris-phenomenon" becomes visible if urease is present, as a consequence of the production of ammonium-carbonate which precipitates the calcium-carbonate and calcium-phosphate in the particular manner proper to this experiment. The addition of some calcium-malate to the yeast-urea-gelatin enhances the sensibility of the iris-reaction.

The discovery of urease in *B. radiculicola* was the result of experiments on the nutrition of this bacterium, performed in 1919 and 1920, with the co-operation of Mr. Ir. L. E. den Dooren de Jong at Delft.

M. W. BEIJERINCK.

Gorssel, Holland.